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AMERICAN BEE JOURNAL

OCTOBER 1923 $1.50 A YEAR

COLONY OF BEES IN A POLISH HIVE IN AN APIARY NEAR WINNIPEG. THE CORNER OF THE HIVE HAS BEEN BITTEN AWAY BY A BEAR.

CELLAR WINTERING OF BEES—Francis Jager

THE CARE OF EXTRACTING COMBS—C. P. Dadant

A GLIMPSE OF MANITOBA—L. T. Floyd

EXPORTING AMERICAN HONEY—J. Skovbo.

Real Three Colored Lithographed Pails

Here is something that the forward beekeeper, who wants to market his honey right, will appreciate. After several months' planning we are able to offer our friends and customers something especially distinctive in the "HONEYWARE" lithographed pails. These "HONEYWARE" pails are not a slipshod, overnight creation but a real pail in RED, GREEN and GOLD, with the name of the producer in BLACK when ordered in quantities.

They are sanitary lacquered inside, making them rust-proof, both inside and out. Honey may be kept for a long time in them without any danger of discoloration of the product or rusting of the container.

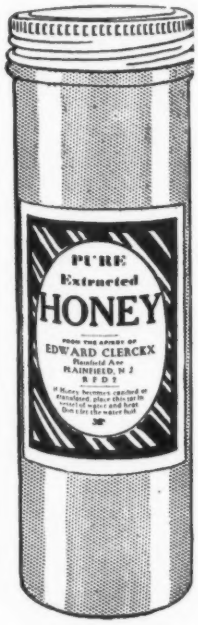
You should get our prices and investigate before placing your order for your season's requirement in the package line. Furnished in 2½-lb., 5-lb. and 10-lb. sizes; friction tops.

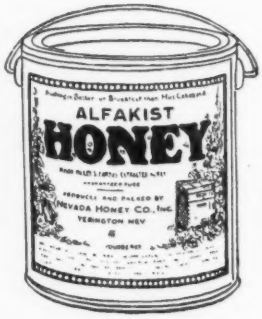
PLAIN TIN HONEY PACKAGES

As usual, we handle a full line of friction-top pails in plain tin at prices that will save you money. And you can get labels for these pails that will strike the eye.

Packed in corrugated cases for shipment, assuring their reaching you in perfect and clean condition.

The FIVE GALLON cans we send out are in strong cases with hand-holds that will stand shipment without breakage and save freight claims.

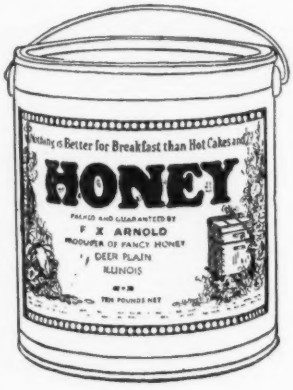




GLASS JARS

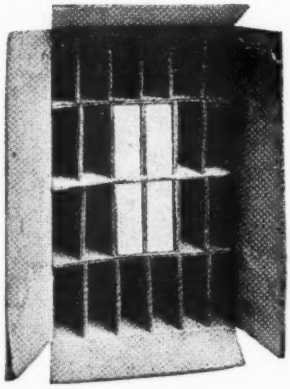
We handle the tall, attractive 20-ounce jars in two dozen reshipping cases, as well as the 6-ounce jelly glasses in the same size and style of container.

CORRUGATED COMB-HONEY SHIPPING CASES



Last year was our first in selling the "Crane" corrugated comb-honey shipping case. We sold so many of them and they were so well liked that we expect to sell several cars of them this year. They transport comb-honey well and are a great saving of expense.

Made in 24-lb. sizes for regular 4¼x1⅞, as well as for 4¼x1½ and 4x5 sections.



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We have them. They go well, too, with the corrugated shipping case.

Remember the "Honeyware" Lithographed Pails. We cannot recommend them too highly for your use. Write for folder and complete list of honey containers, advertising literature and other goods

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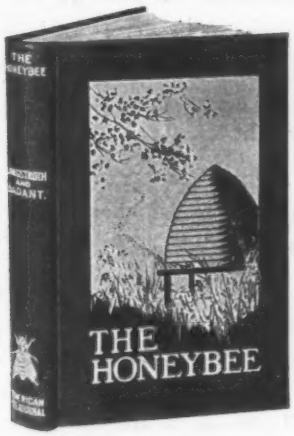
DISTINGUISHED BOOK



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A classic, embodying the experience of three modern leaders of beekeeping—Langstroth, Charles Dadant and C. P. Dadant.

Twenty-one editions—in English, also published in Russian, French and Spanish.

Add the experience of these master beekeepers to your own.

In the leisure hours of winter, prepare for better work next spring.

AMERICAN BEE JOURNAL BOOKS ARE THOROUGH

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by Frank C. Pellett $2.50

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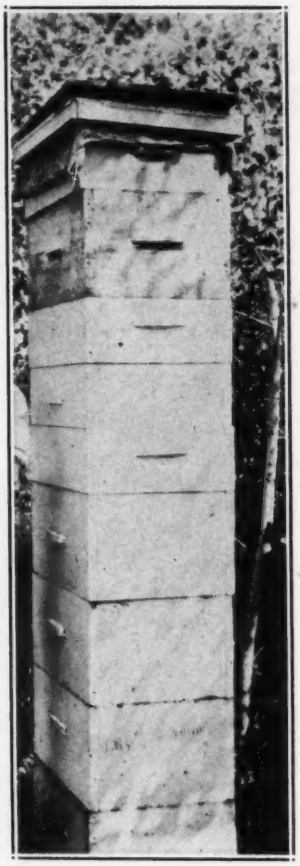

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"GRIGGS SAVES YOU FRIGHT"

TOLEDO, OHIO

Clean-Up Sale During Sept.

Send for special prices on goods you may need for next season's use.

WRITE TODAY

Honey containers for both comb and extracted honey. All kinds and sizes, both glass and tin.

Cowan extractors, uncapping cans, and storage tanks, at bargain prices.

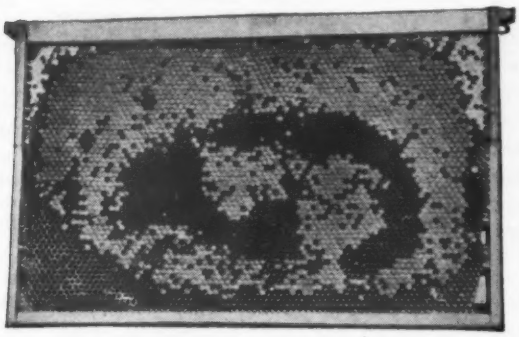
Free catalogue sent upon request

HONEY AND MAPLE SYRUP WANTED

Cash or in exchange for bee supplies. Send sample and state what price asked in first letter. Saves both time and money.

THE GRIGGS BROS. CO., Toledo, Ohio

IS THIS WHAT YOU SEE
WHEN YOU PULL A COMB FROM YOUR HIVES?



A full comb built from Wired Foundation
Few holes. No sagging.

Dadant's Wired Foundation gives the greatest possible results in good combs

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DADANT & SONS
HAMILTON, ILL. U.S.A.

When you plan your foundation buying consider what this means to you.

Dadant's Wired Foundation and slotted bottom-bar frames are sold by all distributors of Lewis "Beeware" and Dadant's Foundation. Send them your orders.

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HAMILTON, ILLINOIS
Makers of Dadant's Famous Foundations
WIRED—PLAIN—SURPLUS

BEESWAX—We need constantly large quantities of beeswax and pay good prices for it. We cannot use mixtures containing other waxes, as it spoils the purity of our product. Ship pure beeswax to us at Hamilton, Ill, or Keokuk, Ia., or drop us a card and we will quote f. o. b. here or your station, as you wish.

WHAT CONSTITUTES A COLONY OF BEES?

The expression "colony," as used in connection with apiculture, is, I think, of modern origin, and should be used only to distinguish a modern bee family in working order, standard hive, drawn combs on movable frames, etc., but not necessarily supers, excluders or similar extra equipment. Bees in buildings, rocks or trees I would call "swarms," which is what they were when they arrived, and which also is likely all that will be obtained by the person who removes them. All other variations of bee families and their abodes are much better described by the terms commonly used, such as skep, gum, boxhive, etc., than by the word "colony."

J. Skovbo.

As to what is a colony of bees would depend somewhat upon the season of the year. For instance: Would not a colony consisting, say, of three or four pounds of bees and a fertile queen on April 1 be considered a colony? And then again, would not the same colony when developed or increased to ten or twelve pounds of worker bees and fertile queen and several hundred drones during the honey flow still be a colony of bees? Not in either instance considering the hive, brood or combs or any part thereof, or any part of a $6,000.00 residence, or even a limb of a tree on which they may have clustered. It surely occurs that way to me.

Elias Fox.

According to the "Funk and Wagnalls Standard Dictionary of the English Language," your answer, Mr. Editor, is correct. The definition given therein reads thus: "A stock of bees consisting principally of workers, but having, when perfect, one queen and at times many drones." The German word, "Bienenstock," means a swarm of bees with hive and combs. The Latin word, "Colonia Apiarium," seems to have been used by the old Romans in the same sense.

Indiana.

The Dadant-Langstroth in French

"L'Abeille & La Ruche," 4th edition, which has been delayed in France for three years, is at last published. We can furnish copies of it at $2.50 postage paid. We also have a few copies of the book on queen-rearing of Perret-Maisonneuve, mentioned in our June editorials, and of which we are quoting a chapter in this number. This book is in light pasteboard covers. The price is $1.50 postpaid.

CONVINCING NEW CUSTOMERS THAT YOUR HONEY IS PURE

By Edna Trochler

When we first began to sell our honey direct to the consumer, we soon discovered that many new customers were from Missouri, the "You Show Me" State.

The sign at the gate, "Honey for Sale," attracted and stopped them, all right. Their first question generally was, "Is your honey pure?"

We guaranteed it was pure and offered to refund the money upon the return of any found not pure.

We kept a sample cake of comb honey handy, also a sample glass of each shade of extracted honey. We urged customers to taste before buying. In this way they knew just what they were buying and had their taste suited. Customers often doubled their purchases after testing it.

One year Mr. Mundell bought a quantity of honey cook books and gave each good customer one. This increased our sales immensely. During the war, when sugar was scarce, we canned with honey, found it fine and advised our customers to give it a trial. All reports were ones of satisfaction. This spread and increased our sales.

Another year he bought glass honey dishes, real fancy ones with bees and clover blossoms on them. These he gave away as souvenirs with large orders of comb honey. This created quite a sensation and, of course, increased sales.

Another attraction was a glass display hive. Here they could see the bees at work with no danger of getting stung.

When the beekeeper had time, and customers were curious and likewise brave enough, he often took crowds into the apiary to show them the bees and explain to them all about bee culture. Much interest was shown and I believe much knowledge was imparted. In answer to the query, "Won't they sting?" I often saw Mr. Mundell catch a drone, open his mouth and toss it in for a moment or so, to the horror of the crowd. We drew interest in this way, and gained many new customers, I am sure.

Still another way of satisfying extracted honey customers was to take them through the large extracting house and show them how honey was extracted and handled. Many thought extracted honey was heat. This increased sales and showed them that extracted honey is just as pure as comb.

Gary, Ind., R. R., Box 91.

TENNESSEE-BRED QUEENS

Fifty-one Years' Experience in Queen-Rearing

Breed Three-Band Italians Only

	Nov. 1 to June 1			June 1 to July 1			July 1 to Nov. 1		
	1	6	12	1	6	12	1	6	12
Untested	$2 00	$ 8 50	$15 00	$1 50	$ 7 50	$13 50	$1 25	$ 6 50	$11 50
Select Untested	2 25	9 50	18 00	1 75	9 00	16 00	1 50	7 50	13 50
Tested	3 00	16 50	30 00	2 50	12 00	22 00	2 00	10 50	18 50
Select Tested	3 50	19 50	35 00	3 00	16 50	30 00	2 75	15 00	27 00

Select tested, for breeding, $7.50.

The very best queen, tested for breeding, $15.

Capacity of yard, 6,000. I sell no bees by the pound or nuclei, except with high-priced tested and breeding queens.

Queens for export will be carefully packed in long-distance cages, but safe delivery is not guaranteed.

JOHN M. DAVIS, Spring Hill, Tenn.

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A Superior Quality at Less Cost **Supplies** *A Superior Quality at Less Cost*

(MADE BY THE DIAMOND MATCH CO.)

Hives, Hive Bodies, Frames, Foundation

10 frame Standard Hives, with metal cover, inner cover; frames complete ---------- $13.90 per crate of 5

10-frame Standard Hive Bodies, with frames ---------- $ 6.15 per crate of 5

A. D. Frames, 9⅛x17⅝ split bottom bar for vertical wiring ---- $6.00 per 100

Diamond Brand Foundation

Medium Brood ---------- 5 lbs., 60c per lb.; 25 lbs. or more, 57c lb.

Thin Super ---------- 5 lbs., 65c per lb.; 25 lbs. or more, 60c lb.

Glass and Tin Honey Containers

2½-lb. cans, in crates of 100 ---------- $4.00 a crate

5-lb. pails, in crates of 100 ---------- $7.00 a crate

10-lb. pails, in crates of 50 ---------- $5.25 a crate

60-lb. tins, used, good condition, 2 tins per case ---------- 25c each

60-lb. tins, new, 2 tins per case, ---------- $1.00 each

Glass Jars with gold lacquered, wax lined screw caps—

8-oz. honey capacity, 3 doz. per carton ---------- $1.50 per carton

16-oz. honey capacity, 2 doz. per carton ---------- $1.20 per carton

3-lb. or quart capacity, 1 doz. per carton ---------- $1.00 per carton

Hoffman & Hauck, Inc.

Woodhaven, N. Y.

HONEY IN RADIATORS

We have noticed several articles in papers regarding the use of honey in auto radiators. A customer came and bought some honey for that purpose, saying he was going to give it a trial. He said he had seen the article in a local paper and had put some honey and water in a bottle and watched it through some very cold weather, and it did not freeze.

We decided to try it also, and mixed some honey and water, half and half, and put it in our Ford. Our garage stands in an exposed location, and only "common board 1x12, up and down," for siding. We also filled a bottle with the mixture and kept it in an exposed place to see how it would act. We have used the Ford right along and paid no attention to the mixture, except to see the radiator is kept full. We have had the thermometer 25 degrees below zero, and possibly lower (one of our neighbors has a thermometer that registered 35 below, but we think it is not accurate), but we took our chances and the car was not injured in any way, and we were downtown with no protection—everything just like summer, while others were putting robes over their radiators and let them run to prevent freezing; but our car was taking all that came and working fine. We did not boil the honey for an hour, as one of your correspondents recommended, and so far the car does not show any signs of foulbrood, and we think the heat given to the mixture while the car is running will kill all germs. The article called to our attention by our customer said it was safe at a temperature of 40 degrees below zero. We would certainly try it out at any temperature that might come, but our cold snap stopped at the point mentioned.

W. HICKOX.

Montana.

BALLED QUEENS IN PACKAGES

On page 410 of the August Journal, "Michigan" mentions receiving a package of bees in which the queen was balled on arrival. This complaint has been made a number of times, and I think I came across the solution of the problem this summer.

A friend told me of finding a queen balled in a package, and in examining them he found a virgin queen in the same package. Noticing other queens balled, he made a systematic examination of the shipment and found 29 virgin queens in a shipment of 100 packages. That is enough to cause considerable complaint of lost queens—virgins sent instead of mated queens, and hybrid queens for pure ones.

This probably came about by the breeder raising brood above the excluder; virgins emerged and were shaken off when packages were filled.

E. M. Cole.

NOW IS THE TIME TO BUY

Pails, Shipping Cases

5 LB. FRICTION TOP PAILS, PER 100 ..... $ 6.90

10 LB. FRICTION TOP PAILS, PER 100 ..... 10.25

SINGLE TIER SHIPPING CASES FOR 4¼x4¼x1⅞ SECTIONS, HOLDING 24 SECTIONS, WITH GLASS, EACH ..... 39 CTS.

SAME AS ABOVE, WITHOUT GLASS ..... 36 CTS.

WE ALWAYS BUY HONEY. SEND SAMPLES.

Ship your Old Comb and Beeswax. Highest market price.

The Fred W. Muth Co.

"THE BUSY BEE MEN"

CINCINNATI, OHIO

WE MANUFACTURE

BEE SUPPLIES

THAT ARE MADE TO SATISFY

Special Prices on No. 2 Sections

4¼x4¼x1½, plain ..... $7.00 per 1000

4¼x4¼x1⅞, two beeway ..... 9.50 per 1000

We also have a supply of 10-frame shallow extracting and section supers 15⅞ in. wide, which we are closing out at greatly reduced prices.

Let us quote you prices before placing your order.

A. H. Rusch & Son Co., Reedsville, Wis.

Italian Queens, Yancey Hustlers

Three-band Strain. They get the honey.

Fifty two-pound packages shipped to Ontario in May of last year produced 160 pounds of fancy section honey per package. The rush of package shipping is now over and we can supply you promptly with this finest strain of queens:

Untested, 80c each; $9.00 per doz.; $70.00 per 100. Tested $1.50 each.

Only one grade—select. We guarantee safe arrival and satisfaction in every respect.

Caney Valley Apiaries, Bay City Texas

YANCEY BROS. OWNERS

HONEY WANTED

—BY—

The RECOGNIZED HONEY HOUSE of CHICAGO

"Wanted up to ten cars of honey (mostly comb.) Will handle for your account or buy outright. We are the RECOGNIZED HONEY HOUSE OF CHICAGO. Let us hear from you at once what you have to offer or ship."

LET'S GET STARTED

COYNE BROTHERS

119 W. South Water Street. Chicago, Illinois

HONEY CONTAINERS

5-lb. friction top pails, per reshipping case of 12	$ .10
10-lb. friction top pails, per reshipping case of 6	.90
5-lb. friction top pails, per crate of 100	7.00
5-lb friction top pails, per crate of 200	13.50
10-lb. friction top pails, per crate of 100	10.00
60-lb square honey cans, per case of 2 cans	1.25
60-lb. square honey cans, per case of 1 can	.80
60-lb. square honey cans, in bulk, each	.40
16 oz. round glass jars, per reshipping case of 24	1.35
6½-oz. tin top tumblers, per reshipping case of 48	1.60

Prices F. O. B. Boyd, Wis.

Write for prices on comb-honey shipping cases.

Our cases are neat, smooth and strong, made of whitewinter sawed basswood.

Sections

No. 2 4¼x4¼x1⅞ two beeway sections, per M $9.50

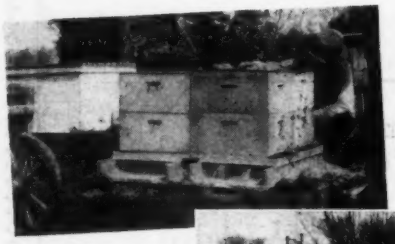
We have an over-supply of these sections and are offering them at this reduced price for a limited time only.

We carry a full line of Bee Supplies. Write for our free descriptive catalog and price list.

AUGUST LOTZ COMPANY, Boyd, Wis.

49 YEARS FOR PROGRESS IN BEEKEEPING — *No. 10*

YOUR BEE COLONY LOSSES
This Winter Can Be Less Than 1%



In the fall the thorough beekeeper packs his hives as shown here—with cases insulated at the sides, top and bottom.

Then you know your swarms are snug and warm when zero days come.

And in April, when the maple is in bloom, strong, sturdy swarms are busy putting up honey for you even before they are unpacked.

When the temperature goes down to 57 degrees F. bees are normally unable to fly and for protection form a cluster to create heat. The bees inside consume honey and give out heat. The bees outside help to retain the heat. Working in and out, all gradually receive the benefit.

Spring dwindling through severe weather and lack of protection frequently weakens a colony to the point where it is unable to build up in time for early honey flows. But the fault usually is with the beekeeper because of poor food supply or inadequate protection.

Proper wintering requires (1) requeening in the fall, (2) protected location for the hives, with proper packing and insulating, or storing in dry, ventilated bee cellars, where the temperature can be held between 40 and 50 F., and (3) finally an adequate supply of honey of good grade, containing minimum indigestibles, whether wintered indoors or outdoors.

WINTER losses among the bee colonies of the United States during recent years has been a disgrace to the industry. They have run as high as 30% and in some localities even greatly in excess of that.

What the beekeeper does between now and the time of the first killing frost will have more to do with the success of next year's honey crop than anything he can do next Spring.

You need buy no additional equipment from us or anyone. You can control your winter losses simply and surely by giving the bees a square deal.

Every detail of wintering your colonies is authoritatively covered in our booklets, "How to Manage Bees in Fall" and "How to Winter Bees Outdoors," just as every detail of successful beekeeping, so far as known, is authoritatively covered in our series of Lewis beekeeping "How" booklets. 5c a copy postpaid to any of the 175,000 beekeepers who have bought Lewis Beeware or with whom we have corresponded on beekeeping.

HOW
TO WINTER BEES OUTDOORS
A RECITAL OF IDEAL COLONY CONDITIONS IN THE FALL WHICH THE BEEKEEPER MUST APPROXIMATE TO INSURE A MINIMUM OF WINTER LOSSES

BEE HIVES AND APIARIAN EQUIPMENT
BEWARE
WHERE YOU BUY YOUR
BEEWARE
REG. U.S. PAT. OFF.
LEWIS U.S.A.
WATERTOWN
MAKES THE FINEST.

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AMERICAN BEE JOURNAL

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CELLAR WINTERING OF BEES

By Francis Jager

Chief of Division of Bee Culture, University of Minnesota

THE method of wintering bees at my bee farm on Lake Minnetonka for the past seven years has been so successful that I have no hesitation in publishing it for the guidance of other commercial beekeepers.

During this period we did not lose any normal colony during winter, and never had dysentery (which indicates poor wintering), and had no trouble with sick colonies in spring.

Our apiary consumption of stores was as follows:

1920-21—
146 colonies. Total, 1518
Maximum, 21.2. Minimum, 6
1921-22—
187 colonies. Total, 1608
Maximum, 24. Minimum, 4

All our bees are fed sugar sirup the last part of September by our old-time fast-feeding method. We use ten-pound friction-top pails with fifty holes of shingle nail size through the cover, made from inside, with no holes nearer than one inch from rim. The hives are leveled. We feed through the Porter bee escape hole in the thin cover. An empty super and cover protect the pail. The sirup is boiled by steam from our six-foot, high pressure steam boiler, which practically costs nothing to operate. Five sacks of sugar are mixed in a tank at one time; one-half pound of tartaric acid is added to one brew. The boiling of sirup takes about one hour. Pails are filled with sirup quite warm and taken to the bee yard. One man takes off the hive cover, the other by a smart motion inverts the pail over the hole, and the cover is replaced. Speed, 200 per hour.

All colonies are fed ten pounds of sirup. Those still light are given additional pails.

We consider the ten-frame Langstroth too small to hold forty pounds of honey and eight frames of bees during winter. As bees do not cluster on honey, an equivalent of fourteen Langstroth frames is required to accommodate bees and honey at the same time. We use for this emergency a two-inch frame between the bottom board and brood chamber, allowing the bees to hang down into the empty space.

After the rims are put on, at the time of feeding, the bees are left alone until the first of November, when they are placed in the cellar. Every colony has been weighed when taken in and out of the cellar for three seasons.

Our cellar is built into the side of a clay hill and is 55 feet long, 11 feet wide, and 8 feet high. The excavation was 10 feet deep in the rear of the cellar on the upper side of the hill and level with the ground in front. The excavated clay soil was all used to fill in the front part of the cellar after the cement work was finished. The construction of the cellar is cement, with reinforced concrete ceiling. Asphalt on top of the ceiling and outside of walls excludes moisture. A six-inch drain pipe is laid all along each outside wall below the bottom. These two drain pipes unite into an eight-inch pipe with an open wire-screened ending, twenty feet beyond the cellar door. A "T" in each of the four corners of the cellar provides four

Jager's apiary and cellar in summer.

six-inch openings a little above the cellar floor. This drainage pipe acts also as a floor ventilator and is kept wide open all winter. The cellar has a five-foot concrete vestibule in front, with three-inch three-ply doors. The cellar is covered on top by four or five feet of soil grown over with grass and evergreen trees. The floor of the cellar is clay, covered with two inches of sand. Retaining walls over and on the sides of the cellar front hold the soil from the entrance. The soil slopes down on the sides, giving the cellar an appearance of an Indian mound. No part of the cellar is covered with less than four feet of soil, preventing the frost from ever reaching the cement. Two ten-inch ventilators, through the ceiling and soil, extend about two feet above the ground. They branch out inside "T" shaped into the four corners of the cellar on top just above the ground ventilators.

The size of the cellar is 55x11 feet, but it should be 12 feet. The hives are placed in four rows, five high, two rows along the wall and two in the center, with two small passageways for the inspection of bees. The cellar is dry in winter, but not bone dry.

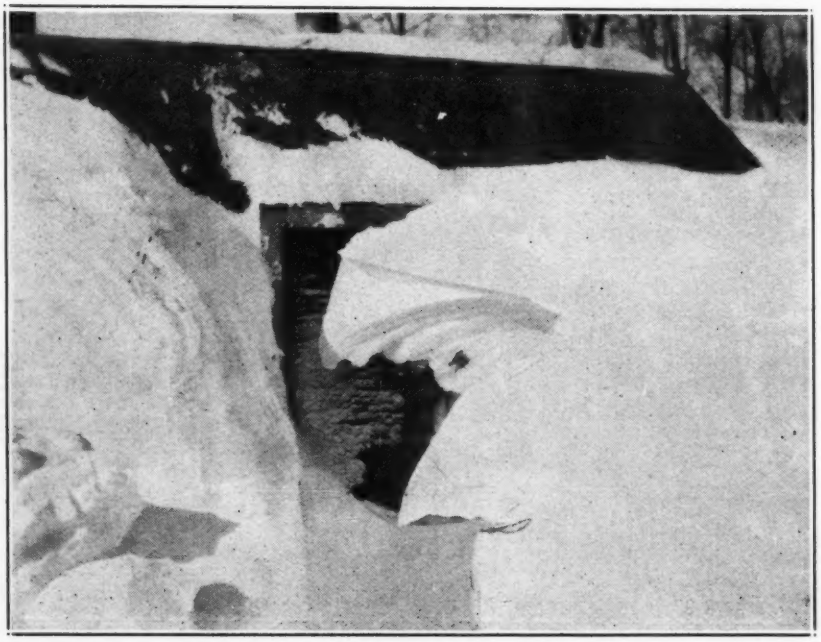
We winter at 40 degrees F. With higher temperatures our strong colonies break their winter cluster and fly out too much. A recording thermometer is kept going all winter. Temperatures are raised by closing one top ventilator. When fully open, the temperature will stay at 40 degrees F., except in extreme cold spells, when it may fall to 36 degrees. When partially closed the temperature may be made to rise to 48 degrees. In very cold weather hoar frost forming inside of ventilator pipes will automatically reduce ventilation. The temperature of the cellar does not go up in spring.

The bees in our cellar are so quiet all winter that upon entering the cellar they appear to be dead. A disk from the recording thermometer of January 8 to 15, 1923, will give an idea of the constancy of our cellar temperature. The moisture of the cellar is near the saturation point. The ceiling and walls of the cellar near the bees are dry, but near the entrance, where there are no bees, dew forms at times on the ceilings and walls. I want it that way, because I had, in years gone by, poor success in wintering bees in bone-dry cellars. The bees probably get too dry and fly out for a drink, because of excessive vaporation and consequent thirst inside the hive.

Our bees are not removed in the spring until pollen is abundant. They stay in the cellar until April 1 to 15. The longest time of confinement was 1921-22, when they were in the cellar 166 days.

Facts are stronger than theories, and I have no hesitation to say that our wintering of bees is safe. There are other successful methods of wintering bees, but to those who have had "bad luck" in the past I have no hesitation in recommending our method.

The average winter consumption of stores for both Italians and Carniolans during 166 days of confinement in the winter of 1920-1921 was 10 2-5 pounds. During 157 days in 1921-1922 it was 8 3-5 pounds for Italians and 8 2-5 pounds for Carniolans.



Jager's bees are comfortable in this cellar in winter when the snow lies deep outside.

"ARE THERE WEDDING MARKETS IN THE AIR?"

By Theodore H. Frison.

In the January 1923, number of the American Bee Journal, Dr. H. v. Buttel-Reepen gives an interesting discussion of the "Memory of Location in Queens." Among other topics discussed in this article, v. Buttel-Reepen gives a review of several observations reported by different observors which tend to indicate that there are certain places where drones and queens of the honeybee meet. Attention is also directed to the fact that certain ants and bumblebees are known to have a common meeting place.

The observations of O. J. Lie-Pettersen (1901) in Norway have shown that copulation among drones and queens of bumblebees commonly, if not as a rule, takes place in the open while the bees are resting on leaves in the tops of trees. Previous to the observations of Lie-Pettersen not a great deal was known about the mating habits of the European bumblebees. Hoffer (1882), one of the foremost students of the European bumblebees, held the opinion that most of the mating took place within the nest.

Very little can be found in our American literature concerning the mating habits of bumblebees. Since 1910, I have been investigating the habits of some of our American species of bumblebees, and my observations and experiments support the conclusion of Lie-Pettersen that copulation as a rule takes place outside of the nest. According to my observations, not all species of bumblebees have the same preference as to the kind of place where they copulate. The drones and young queens of the common field bumblebee, **Bremus americanorum, Say,** often mate on the ground among the vegetation, within a few yards of their nest. The males of another species of bumblebee, which have large eyes, congregate in the sunshine on the leaves of trees. Judging from my experiments in the controlled mating of bumblebees, I am convinced that this habit bears some relation to the mating habits of the species involved.

The interesting point of my observations in connection with v. Buttel-Reepen's article is that many of the habits of our American bumblebees are similar to those displayed by European bumblebees. For instance, mating as a rule occurs outside of the nest. Furthermore, there is good reason to believe that some of our bumblebees mate while resting in the sunshine on the foliage of trees, as they are known to do in Europe. It is interesting to note that the males of certain species of bumblebees which fly about trees and that I suspect of mating while resting on the foliage of trees, have large eyes—a structural condition paralleled in the case of the male honeybee. Corresponding with many other parallelisms in habits, it would not be surprising if honeybees do have "wedding markets in the air," as the observations quoted by v. Buttel-Reepen seem to indicate.

Illinois State Natural History Survey
Urbana, Ill.

SAFE INTRODUCTION OF QUEENS

By E. G. Carr

IN August American Bee Journal, E. M. Cole seems to make out a rather bad case against modern beekeeping. On page 397 he says: "Whenever I handle bees in **any way enough to disturb the brood nest,** (black face mine) except during a honey flow, I expect a per cent loss of queens." My expectation and experience under like conditions is I do not expect a loss of queens.

He also says, "If colonies are examined early in the spring for stores or queen I expect some loss of queens." I don't. Continuing further he says: "When queens are being mated in nuclei it is almost impossible for the beginner, and even for some who are past that stage, to avoid frequent examination to look at the cell or the young queen. This will cause a loss of queens even in a honey flow." This is that curiosity which is said to have "killed the cat." Probably all of us might confess having some of this in our makeup. Dear me- You just naturally can't expect a human beekeeper to keep away from his hives. What's the use of having bees if one can't look at them?

Mr. Cole would have us believe colonies should not be disturbed except during a honey flow, and even then a loss of queens is expected because of the manipulation.

In my work of bee inspection in New Jersey, covering the past eleven years, handling thousands of colonies in a season, I have yet to hear of any loss of queens due to manipulation. New Jersey beekeepers are not so bashful that they would fail to mention any loss of this character.

My work is carried on continuously during the breeding season and colonies examined every day except when raining. Sometimes inspections are made in March and as late as the latter part of October.

New Jersey is not flowing with honey to the extent that work can always be done during a honey flow, yet I have had but one complaint. A beekeeper had a two-story colony with a queen in each story, with an excluder between. He claimed that during my examination I let the two queens get together, with the usual result that one was killed.

It is conceivable that a colony **might** be so demoralized that it would attack its own established queen, but this would seem to be more because of faulty manipulation rather than from the condition of the honey flow at the time.

Where colonies are on straight combs with no more than one super and not under a shed, I examine twenty colonies an hour. Under these conditions the colony hardly has time to realize it is opened until it is closed and in position to "carry on" as usual.

Of the commercial queen rearers with whom I am personally acquainted, I have never heard one mention a loss of queens in nuclei due to manipulation. They seem entirely willing to unburden their minds of their troubles, of which they have plenty, but this has not been mentioned; therefore I assume, with reason, it has not occurred to a noticeable extent.

There are two possible effects which Mr. Cole's article may have. The less informed beekeepers may object to the inspector handling his bees except during a honey flow, and even then, as it might, with reason, be argued this would mean a loss of honey because of the interruption. He might also put off giving needed manipulations, fearing his queens would disappear.

No one can be blamed for protecting his queens, but I fear Mr. Cole's loss is due to some cause other than **ordinary** examinations.

I am as anxious as anyone to avoid unnecessary manipulations. The labor cost is the greatest one in honey production and should be reduced as much as possible consistent with safety. On the other hand, the beekeeper should examine the brood nest frequently enough to know approximately, at all times, the condition regarding the queen, stores and healthfulness of brood. Because this was not done I have seen some sorry cases of disease spreading.

However, Mr. Cole started out to tell the amateur how to safely introduce queens.

He then so complicates and adds to the manipulations that it would require a "professional amateur" to carry them out.

There is what I term a "profitable loss" in queen introduction as well as in some other apiary manipulations. In other words, it is more profitable to use an easy and simple plan and experience a small loss rather than go to the trouble of some elaborate manipulation which can be depended on to give 99 per cent of safe introductions.

My observations have led me to believe that the ordinary three-hole "Benton" mailing cage is yet the best introducing cage either for the amateur or the professional. It is easy, no unusual skill is required and successful introductions average around 90 per cent.

A single experience is not always sufficient on which to base a conclusion. To illustrate: I was once urging a beekeeper to introduce Italian queens and replace his scrub stock. He said he had never been able to introduce them. In reply to a question as to how many he had tried, he said, "One."

I fear the advice often given, to make and keep a colony queenless a few days before giving the caged queen causes mischief. My argument is, this adds to the labor, and it is my opinion that when a colony has cared for queen cells until rather well developed it is more in the humor to keep them rather than to accept the given queen. The advice so often given to squeeze the cage between two combs appears to be faulty. When in this position, if there is a honey flow, comb will be built onto the cage, but, worse still, the hive bees do not have an opportunity to get acquainted with the caged queen, since their access to the wire cloth is shut off.

I prefer placing the caged queen above the top bars and parallel with them, with cloth down and covering the space between two frames. This gives the bees an opportunity to "get acquainted" with the queen through the wire cloth.

When an excluder is in place on the colony it may be inverted and thus provide a space in which to place the queen cage. With a one-story hive with a telescoping cover, the inner cover may be inverted and room provided for the cage. If a comb honey super is on the hive, by slightly raising one of the central section holders sufficient room is had below for the cage.

Let's make the operation of queen introduction as easy and simple as possible and thus encourage the introduction of good stock. Everyone knows better stock is badly enough needed in the majority of apiaries.

New Jersey.

CLEVER ADVERTISING

By Mrs. Luella B. Lyons.

In an Iowa city, recently, I noticed, as did hundreds of others, a huge space in the paper with only a question mark and the name of a grocer. Each day I watched this ad grow. One day a future date was added; the next, the time, and so on until the last three days the ad was completed, and this is what the headlines were: **"Be Sure and Meet Your Honey at the Kenny's Grocery."** I was curious and I, too, was on hand to see the fun and discover the joke. Everybody seemed to want to meet their honies, for there was an awful throng of people there. A bevy of pretty girls served waffles and honey, selling honey to all. The girls were forced to bring their cases of honey and sell out of doors to accommodate the crowd, as the store was too jammed. Clever advertising attracts, and this clever merchant knew how, for he even got me guessing, and curiosity helps sales.

A baker, catering to the sweet tooth of the public, recently advertised that with every order of two dozen of Parker House rolls he would give away one small cake of honey, one order to a customer. He was forced to close the sale before the day was half over, for he discovered that people had taken a sudden liking to Parker House rolls or else everybody ate honey. This sale was followed by many repeat sales, all with the same outcome. Now people come to the shop and enquire as to when the next sale will be held.

AMERICAN BEE JOURNAL

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Published Monthly at Hamilton, Illinois.

Entered as second-class matter at the Postoffice at Hamilton, Illinois

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THE EDITOR'S VIEWPOINTS

STRASBOURG NATIONAL MEETING

The editor acknowledges with thanks the receipt of a postal card from the French National Beekeepers' meeting at Strasbourg August 16-19, signed by a number of beekeepers. They were evidently having a good time.

"Ou est le lait, la est le miel." (Where there is milk, there is honey.) Olivier De Serres, 1646.

J. Gigon, Inspector of Apiaries in Switzerland, writes, in the Bulletin de la Societe Romande, that the acarid "Tarsonemus" has been making great ravages in England, in America and in several French regions. This is how false information is scattered. One man makes a thoughtless statement, another repeats it, and incorrect information is thus spread. No Tarsonemus has yet been reported as existing in the United States.

THE MILLER MEMORIAL DEDICATION

TheWisconsin meeting, or Chautauqua, during which the Miller Beekeepers' Library was dedicated, was a success in every way. The attendance was 351, probably as large a meeting as was ever held among beekeepers in the United States. But I regret to say that only 18 Illinois beekeepers attended it. Of these, 8 were from Chicago or its suburbs. As Dr. Miller was an Illinois beekeeper, it would have been more proper if a hundred or so from Illinois had come.

Outside of the Miller dedication, the meeting was mainly a Wisconsin meeting, and no wonder. But the interests of the Wisconsin beekeepers were well discussed. It is very apparent that Wisconsin honey producers are alive to the question of co-operation in honey sales. Wisconsin honey, a Badger State trade-mark, and Wisconsin purchases of lithographed pails were much in evidence.

Northern honey is excellent; we all have to acknowledge it; even though each state or each country thinks its honey the best. And why should we not think so? Do we not have the best soldiers and the most glorious flag? Why not the best honey? Each country knows its honey to be best, even if it is honeydew or heather honey.

Leaving all jokes aside, Wisconsin is doing the proper work to have an understanding upon prices and upon advertising. The leaders of Wisconsin are working in an effective manner to convert to co-operation the fellow who waits till his neighbors have set the price and undersells them, so as to sell his honey first. They will also have some influence upon the fellow who goes to the first grocery he can reach and sells them his honey at the price which the grocer chooses to offer. The trouble with that beekeeper is that he does not believe in bee meetings, where you have to pay a whole dollar, for membership, and only get to hear speakers who are anxious to make more beekeepers "when there are too many already." This argument of "too many beekeepers" is not given by backwoodsmen only, but by some very bright producers who would like to be alone in the production of honey. And yet, we produce but about three hundred million pounds of honey in a country which consumes ten billion pounds of sweets. Plenty of room, if we only let the people know that our produce is the best sweet. This matter of advertising honey was very ably discussed by John M. Kelley, of Baraboo, who, although not a honey producer, is certainly a splendid advertiser.

Miss Fischer, well known to all Wisconsin beekeepers, is one of the most efficient secretaries I have ever met. She should be credited for much of the activity of the Wisconsin meeting.

It would be impossible to mention the numerous addresses delivered. The program was overloaded with good things. But enough of the men on the program were absent to give sufficient time for all that were there.

One interesting feature of the program was a talk by E. C. Davis, of the Louisiana Agricultural College, upon the beekeeping problems of the South, and especially of the state in which he teaches. The old beekeepers there are almost exclusively box hive men, and the only progress they can expect is from the young generation. But the young generation attends meetings sure enough.

In the North, the man who attended meetings 50 years ago, or even 45 years ago, finds only an occasional member who was attending meetings then. The only such man the writer of this met at Madison, was N. E. France, the former manager of the National Association, who has kept himself in the background for 10 or 15 years, but who can always come forward with some interesting talks when he is called upon.

The discussion of the chemical remedies proposed for curing foulbrood brought out the fact that there is as yet nothing positive in this treatment for American foulbrood, but that treating the combs as a preventive would be beneficial, though not positively sufficient.

The question of using honey in place of alcohol in radiators brought the assertion, in positive terms, from several members present, that honey and water, half and half, well boiled together, is a safe liquid for use, under two conditions: the liquid must not be used to fill the radiator nearer than 4 inches from the cap of the radiator, so that it may not boil over; the second condition is that the circulation must be tight, so that no honey will leak into the engine. But the great advantage of this mixture is that it does not boil as readily as an alcohol mixture, does not lose any of its strength, as does the alcohol mixture and may be refilled with water whenever there is evaporation.

On the evening of the fourth day, August 16th, a banquet which 300 beekeepers attended was enjoyed under the dinner tent, in the grove. Songs by a young lady whose name we have missed, and a few flute solos by Harry Lathrop filled the intervals between the short talks given by dozens of beekeepers.

On Friday, the 17th, the meeting was held at the Agricultural Library and the Miller Beekeepers' Library was officially donated to the State University, Dr. Birge, President of the University, making a short speech in acceptance.

On Saturday morning the beekeepers departed in autos for Marengo, where they arrived shortly before noon.

The writer of this account was chairman of the meeting at the church of which Dr. Miller was a member, and he took particular pains to impress upon the minds of the Marengo people the fact that Dr. Miller was known as a beekeeping expert all over the world, quoting obituaries on Dr. Miller's death from Switzerland, Belgium, France, England, Australia, New Zealand, Italy, Ireland. Mrs. Miller was so pleased with the effect it had upon the Marengo public that she wrote us as follows:

"We want to especially thank you for the fine tribute you paid Dr. Miller at the memorial service in the church on Saturday. The foreign letters you read were out of the usual order and gave Marengo people a knowledge of Dr. Miller that they had never had and impressed us as unusually fine.

"The services of that day will be a pleasure to us as long as we live."

This subject of the Memorial was already broached in the September number, but we wanted to give a fuller account of it.

EXPORTING HONEY

The article in this number by Mr. J. Skovbo, of Oregon, on exporting honey, is very interesting, for it shows quite a few facts, with which we are struggling ourselves, in this country.

It shows first what our editor has often mentioned, that the granulation of honey is natural and that every man who is at all acquainted with the nature of honey will expect it to granulate in cold weather. As honey has been produced and consumed in Europe for centuries, and as they have not tried to conceal its tendency to granulate, the consumers who use honey are informed on this point and look with distrust upon any liquid honey.

Here, we try to keep up and cultivate the distrust of granulated honey among honey customers, with the result that, when our honey granulates on the hands of the purchaser, he believes himself cheated. Are we using good judgment in doing this? The Dadant family has always made efforts to train the customers to the use of granulated honey, which may be so very easily liquefied when wanted liquid. Is it not yet time for our producers to begin training the consumers to the actual facts?

Another lesson taught by the Skovbo article is that much adulterated honey, from America, or reported as from America, has been sold on the European markets, in years past, enough in fact to help the prejudice caused by our liquid honey preference This was known to us already. It is well to know what others say of imported honeys. Listen to the following passage from "The British Guide Book," by Thos. Wm. Cowan, page 90:

"Pure extracted honey will usually granulate if kept at a low temperature. The labels on the jars should draw the purchaser's attention to this important fact; and when the public have learned that granulation is a test of its purity, English honey must have the preference to that imported, which is often mixed with glucose, ostensibly to prevent its granulation."

If we wish to succeed, we must look at the view point of others, we must see ourselves as others see us and correct such difficulties as stand in the way of success.

Mr. Skovbo sent us samples of the honey, both pure and artificial, which competed with his, and those honeys are both very poor. But the European consumer is not any more free from prejudice than our own people, and they stand, in the heather regions, exactly as the consumers stand who have had no other honey to eat than buckwheat; they cannot believe that a light colored honey is pure. This is partly due to the habit of each nation to throw stones at other nations, for whatever they produce; what we have is always good; what the other fellow has is always bad.

All these things are the result of prejudice. Let us try to cure our prejudices, and those of our customers as well. Meanwhile let us put granulated honey on the market, in the Fair exhibits, and insist that the customer must learn the true facts about honey.

PRACTICAL BEE ANATOMY

Great Britain has a number of wonderful anatomists. One of these, Miss Annie D. Betts, B. SC., is now publishing, through the Apis Club Library, a very compact work on "Bee Anatomy." We have received a copy of it and hereby acknowledge it. All who have read the writings of Miss Betts are acquainted with her ability. The work consists of 88 pages and 12 plates. It appears that this is the first of a series on the science and practice of bee culture for the Apis Club.

HOW MANY SUPERS TO THE COLONY?

The article on the above subject by Mr. Hawkins, on page 448, calls for a little discussion. We are certainly not in the best honey producing region, and that may be the reason why we consider 6 full story supers as superfluous, per colony, average. As some colonies are always to be found in any apiary that will not fill more than one or two supers, there would be enough to give the best colonies 8 or 10 supers, or a possible room for surplus of 600 or 800 pounds.

It is true that thin nectar requires more space than ripe honey. But when the bees fill a super with thin nectar, we may reasonably expect that they will keep it full, adding more as the honey ripens in that super. Besides, as the season advances, we find much of the honey fit to remove and extract, and soon have supers to spare.

In our own experience, with several outapiaries, we found an average of 3 large supers ample. A few colonies need but one, and that leaves plenty for the colonies that can fill more than 3, say 4 or 5. There are "ups and downs" in the business, and when a season is "down" we feel sorry that we invested so much in supers which have to be kept over summer safe from mice and moths. It is fairly easy to keep a number on the hives. But an average of three supers was all we cared to keep, when the season was unfavorable. When they were full in a good season, we could soon extract enough to give us plenty of room, for the honey does not all ripen at the same time. We had ample experience on this matter.

When it comes to the little comb honey supers, such as Dr. Miller used, each of them holds less than 24 pounds of honey, and it is easy to understand that 6 or 8 might be needed. But large extracting supers will hold all the way from 50 to 80 pounds of honey. They may be extracted when sealed, and we think it is much better to do that than to keep an extra number. Our large crop of 1916 was harvested with an average of not over 3 supers, but a number of them were extracted 3 times over.

As our locality may be still more inferior than we consider it, there may be extra good spots in the North and the West, where beekeepers enjoy an investment of 6 supers per colony. Let us hear from them.

THINGS DO CHANGE

The more we know, the more we have to know and the longer it takes to find out all we must know that we don't know. My father went to school twelve years of his life and was considered a well educated man. It took me 17 years to reach a level of education which gave me advantages equal to his, and I fully expect that my sons will need a post graduate college course, especially if they enter technical fields, properly to fit them for the best in their chosen professions.

It leads one to speculate on what the heights of apicultural education will be in that same near future. We already have college courses in this relatively new branch of agriculture, leading to scientific degrees and what these new doctors will dig out for our future consideration will make most of us who think we know so much realize how much we know "ain't" so.—G. H. Cale.

ON QUEEN INTRODUCTION

In our June editorials, page 287, we mentioned the work of Perret-Maisonneuve on Queen Rearing and promised our readers to publish some extracts from it. We are now giving a translation of the chapter on "Uncertainty of the Different Methods of Queen Introduction." I wish to call the attention of the reader to one particular point: "A queen, removed from a comb in which she has just been laying, and introduced without delay, will always be more readily accepted than those whose laying has been suspended, by long caging." A beginner can hardly realize the weight of this statement.

It is commonly said that a colony that contains drone-laying workers will not accept a queen. We verified this statement long ago. But upon one occasion when I happened to have a colony which was rather strong and wealthy, with drone-laying workers, and I also happened to have a very prolific hybrid queen which I was about to destroy, I ventured on the idea of introducing her to this colony, immediately after removing her from her own. She was accepted without trouble. After that, I often used similar rejected queens, fresh from the hive, in drone-laying colonies and **always** succeeded.

This fact puts additional emphasis upon the ease of introduction of queens that are fresh from the hive and in good laying condition.

One of the numerous Polish apiaries in Manitoba. The hives have but little more capacity than single story Langstroth hives and no supers can be added.

A GLIMPSE OF MANITOBA

Some Interesting Facts About Beekeeping in Western Canada

By L. T. Floyd

MANITOBA, the sure crop province, is located in the centre of Canada; it is the oldest settled province in the Canadian West. One-half of its population of 610,118 resides in Winnipeg, the third largest city in Canada.

Winnipeg is the gateway to the great Canadian prairies. From it the railway lines spread fan-like to the other Western provinces. It has been termed the mouth of the bottle. Out of it, from the beginning of harvest in August until winter closes navigation, the grain pours in a steady stream of around 2,000 cars a day in a rush to the head of the Great Lakes and from thence to the markets of the world. Into it flows a steady stream of immigrants of many nationalities to find homes where thousands of fertile acres still lie unoccupied.

Its population is most cosmopolitan; twenty-six different languages are spoken in Winnipeg and everybody seems at home; there is little class distinction. Census returns inform us that a little over one-half of the population is made up of races to whom the English language is the mother tongue. The balance is made up of forty-three different nationalities.

It is surprising the number of these people that have a knowledge of beekeeping. For those who wish to study European methods, a trip to Manitoba would be one of real interest. The Central European races keep the largest apiaries. These include the Poles, Ruthenians, Ukranians and Russians, but the Swiss, French and Belgians seem to get the largest crops of honey.

We find a few beekeepers among the Chinese, Spaniards, and also the Danes and Swedes, while Icelanders and Indians have nothing to do with them.

Physical Features.

The greater part of southern Manitoba is a nearly level plain about 750 to 1000 feet in altitude, drained by the Red and Assiniboine rivers. In southeastern Manitoba is a plateau of about 1250 feet. Bordering the plain on the west is a discontinuous cliff known as the Manitoba Escarpment. It forms the eastern edge of a second step or level in elevation in the gradual rise from the level of Lake Winnipeg and the Red River Valley to the foot of the Rocky Mountains in Alberta. The escarpment comprises in the south the Pembina Mountain and Tiger Hills, and in the north Riding, Duck and Porcupine Mountains. While there is a gradual rise from the lower plain to the second step along the rivers, which have cut through it, there are, however, abrupt rises along the faces of the mountains. The general topography of this southwest area is in general undulating to hilly. Turtle Mountain, in the extreme southwest, is an isolated highland rising above the general level of the Manitoba Escarpment.

Soils.

From the report of recent soil survey work made by Dr. C. B. Clevenger, of the Manitoba Agricultural College, I get the following information:

The soils of Manitoba are nearly all drift, derived from materials transported during the glacial periods. In this soil there is an abundance of limestone in the surface deposits.

While most of the material carried by the streams from the melting glaciers was deposited into glacial lakes, glacial outwash deposits, as kames and eskers, were also formed. These occur chiefly in southeastern Manitoba. Eskers, of which the best known is Birds Hill, are steep-sided, winding ridges, composed chiefly of sand and gravel.

The largest of the glacial lakes, Lake Agassiz, occupied the southern and central part of the province. It was formed by the highland to the south and by the edge of the ice sheet serving as a dam on the north. The sediment carried into this lake from the rivers flowing into it formed very fertile soil as the waters receded. Across the eastern side of the province runs a strip of light colored soil which Dr. Clevenger says is similar to the Miami soils of Ohio, rich in lime and on which clovers grow luxuriantly.

Climate.

The winter is long, with steady cold.

On the coldest day in 1922 the thermometer registered 38 degrees below zero; in 1921, 33 degrees below, and in 1920, 36 degrees below. These temperatures were recorded in January.

The hottest summer days in 1921 the thermometer reached 94 degrees; in 1920, 95 degrees; and in 1918, 93 degrees.

Because of the dry climate, the winter's cold differs greatly from countries near the seashore and affects beekeeping differently.

Regarding the cellar question,

heat rises much more rapidly than in countries where the humidity is greater, and the beekeeper reading the bee books and papers is almost sure to allow for too much ventilation.

In experiments with outside packed bees, if the packing is carefully placed the bees come through with a very low death rate. They seem to require as much of an entrance to the cases as in the warmer climates, but where eight inches of chaff or dry sawdust is used for insulation they winter splendidly.

We have one beekeeper who winters a few hives with only three inches of forest leaves, but his cases are well protected from the wind. The bees have no flights during the winter, as the cold is constant and the variation not nearly so great as in maritime localities. This may also be said of the summers, which are intensive. The spring opens quickly, the sun gaining strength so rapidly that we seem to jump from winter into summer. Outside packed bees generally get their first flight about March 1.

The first shipment of package bees, 1922, arrived in Winnipeg on April 17 in a snowstorm. These were hived on combs in the basement and were not placed outside until three days later, but before a month these two-pound packages had built up so rapidly that they filled a ten-frame hive, and gathered two hundred pounds of honey before fall.

The winter losses in 1921 and 1922 were not more than 5 per cent of the colonies.

Rainfall.

The precipitation averages over twenty years give 20.34 inches at Winnipeg, in eastern Manitoba, and 17.35 inches at Brandon, in western Manitoba. Although the amount of rainfall is not great, it comes during the growing season.

From the same amount of precipitation higher yields of grain are secured in the north of the province than in the south, where evaporation is more rapid, but this does not prove true regarding honey, as the nights are generally cool and the days warm, and nectar will be secreted rapidly when evaporation is also rapid. In some years a few localities suffer from drought and the honey crop is, of course, lessened accordingly.

Honey Plants.

In 1922 the bees were first noticed carrying pollen from hazel on April 21. On this date the thermometer registered 72 degrees. By May 1 new honey was coming in freely from a number of sources and combs were filling with pollen of many colors. By May 11 dandelions, wild plums and saskatoons were in full bloom. These, with pin cherry, choke cherry and cornus or dogwood, and high bush cranberry, make the bush a mass of flowers of many hues.

The following from the diary of the first survey party on the C. P. railway is descriptive of the natural flora:

"July 31.—Awakened at 8:00 a. m. by hearing a voice exclaiming, 'Thirty-two new species already; it is a perfect floral garden.' Of course, it was our botanist with his arms full of the treasures of the prairie. We looked out and saw a sea of green sprinkled with yellow, red, lilac and white. None of us had ever seen the prairie before, and, behold! the half had not been told us. As you cannot know what the ocean is without having seen it, neither can you in imagination picture the prairie. I may say that Dr. ———'s expressions only conveyed a slight opinion of my own thoughts in the matter. I was really astounded by the number of species and their luxuriance that I beheld on that morning when I first saw the prairie. And for nearly a thousand miles the same thing was repeated at intervals, with variations, chiefly in color. The impressions then made have never faded from my mind."

On the prairie we get first the crocus, or anemone, when the first warm days arrive, in some places covering acres in extent. This flower is found only on the prairie and not in the bush, and yields pollen and nectar and takes the place of the willow, hazel, elm in the park or bush country. It, however, only stays in bloom for about a week.

The dandelion grows in great profusion and yields honey at a time when its stimulating effect is much needed.

After the dandelion comes the white Dutch clover and alsike in some localities. White clover grows in the bush all over the province, even up in most northerly parts. Wherever settlers have taken horses, there the white clover grows. It produces an amount of seed far in excess of that produced in the eastern provinces. It is said that in the early days the Indian named it the "white man's foot," and the term certainly seems to be aptly applied. Along the old Indian trails, by which the early settlers entered the country, but long since abandoned, grows a carpet of white clover, and where the land is still unoccupied it makes

Treeless
Hudson Bay
Treeless
Treeless
Treeless
Flora Zones of Manitoba
C.Z.
Black Area—Northern Coniferous spruce-pine-granite area
Altitude average 400 ft.
Adjoining White—Mixed Woods, poplar - birch - spruce - tamarac and willow area.
Altitude average 800 ft.
Shaded Area—Mixed Prairie, transitional zone of poplars and open prairie, of tall grasses and sedges and willow-dogwood thickets.
Altitude average 1,000 ft.
South-West Corner—Short-grass plains, treeless prairie or S.G.P., with legume and composite perennials.
Altitude average 1,500 ft.

Map showing the natural regions of Manitoba.

Apiary of Trappist monks has given average of 150 lbs. per colony for 15 consecutive years.

splendid pasturage for stray cattle or the rabbits and deer that follow these paths.

Alsike and red clover are important where grown, but as grain is still the principal crop they do not occupy the same position that they do in the East.

Following the clovers, we get some surplus from snowberry or buckbrush (**Symphoricarpos orbiculatus** and **S. racemosus**) and in the older settled localities from sow thistle. These two plants bridge the gap between summer and fall flows and sometimes make August our best honey month.

Wild raspberry and fireweed are important honey plants and increase in importance northward.

Basswood is important along the Red and Assiniboine rivers as far west as Portage la Prairie.

Sweet clover (**meliotus alba**) is increasing in importance every year. It is considered one of the best plants to control and smother out such weeds as the sow thistle, and also is much valued in the localities where dairying is growing in popularity. Alfalfa is also grown extensively in some localities and is considered of great value as a honey producer.

The bulk of the honey is produced from wild flowers, but the cultivated plants above mentioned are supplementing this source and gradually establishing the industry.

We have been unable to determine how far north these plants secrete nectar, but last season (1921) one beekeeper at Bowsman, 190 miles north of Winnipeg, reported a ton of honey from thirty colonies. In 1922 we shipped a colony of bees to The Pas, 490 miles north, and a crop of fifty pounds of surplus was reported. Next year a point for the establishing of an apiary 185 miles north of The Pas has been located in order to push these experiments as far north as possible, but there are only two trains a month on this line, so it is difficult to make shipments.

Wild asters of many varieties grow everywhere. Goldenrods and different species of wild sunflowers are also valuable. There is little lumber, except in the north, but about two-thirds of the country is what is termed bluff or park. In these strips of bush, covered with low-growing poplar, elm, scrub oak and a great variety of shrubs, we find many honey producers. These need to be seen to be appreciated.

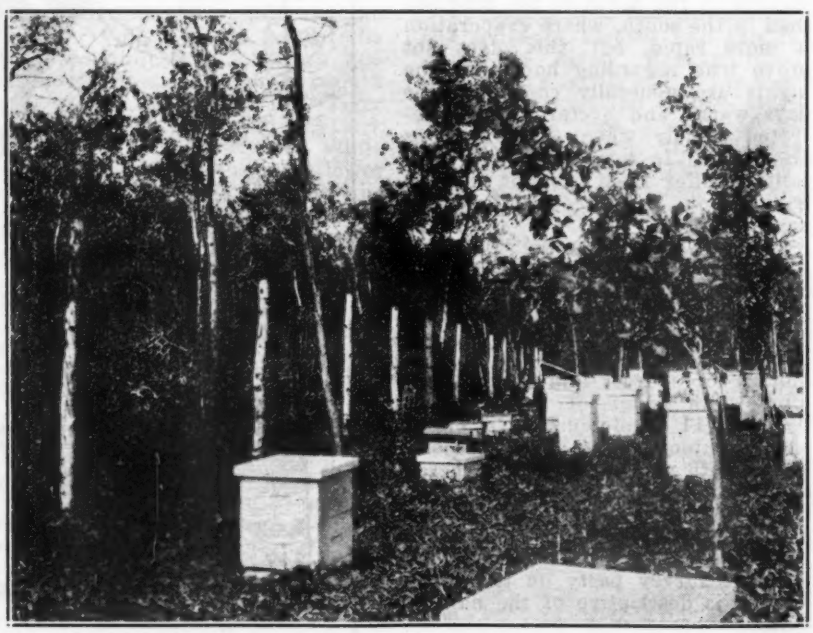
The honey flow in some seasons is continuous, so that the bees carry their drones into winter quarters, when they do away with them. This part of the story may be hard to believe, but it is, nevertheless, true.

The very large amount of seed produced by all plants is a never-failing source of wonder to newcomers that are accustomed to farming in localities where fertilizer must be used in order to get a crop, and that such wonderful crops of vegetables and grain can be produced from the natural fertility of the soil, year after year, is a never-failing source of inspiration to those who like this sort of work. In these northern localities plants develop their seed very much more rapidly than further south. It seems to be nature's way of making up for the shortness of the season.

The prairie provinces, because of the scarcity of fruits, make a good honey market, and the long haul places the local producer at a decided advantage, and it will be many years before this local demand is supplied. Some few localities are already overcrowded, one having over six hundred colonies on a square mile, but there are great stretches of country where no bees are kept for hundreds of miles.

The variety of methods used by the beekeepers from different countries makes the work for the government man very interesting, and the enthusiasm displayed, when big crops of honey averaging three hundred or four hundred pounds per apiary in the most favored localities, encourages many to take up the work. The severe winters soon put the careless ones out of business, so that most of our commercial beekeepers are careful workers, or have especially good cellars in which to store them.

This country looks to the southern States for its supply of bees, as there is no other source of supply. Winnipeg is the port of entry and is situated very nearly in the centre of the continent, so that shipments of package bees come through quickly and in good condition even from points as far south as Texas. Last



Newton's Apiary surrounded by high fence for protection from bears.

season around 1000 packages were purchased and more than three times that number for 1923.

Manitoba has now over a thousand beekeepers listed and last year started 388 beginners, and has a Beekeepers' Association of around 300 members.

In 1912 this province imported 55 carloads of dairy butter; in 1922 it exported 115 carloads. In 1922 this province imported 22 carloads of honey, besides more than that amount in less than carload lots. Will honey production show the same increase in the next ten years? At the present rate of increase it is possible.

THE CARE OF EXTRACTING COMBS

By C. P. Dadant

WE use shallow extracting supers and combs for several reasons: First, combs 6 inches deep are much easier to handle than full depth combs; the knife uncaps them at one stroke; there is less danger of their breaking down in great heat when they are full of honey; a super of shallow combs creates less occasion for the escape of heat in cool spring weather than a full story; besides, our own hives are so very deep that a full story super often gives too much room; last of all, the queen is less apt to establish her brood center in the super, because of its shallowness, for a queen likes good-sized combs in which to make her circle of egg-laying.

There is, however, a time when the queen is attracted to a super, shallow or deep; it is when there is no drone comb in the brood chamber and there is some in the super. We often noticed that the bees would leave drone comb empty, in the super, putting honey in worker cells around it. It was Dr. Miller who suggested to me that the bees either understood the desire of the queen for drone cells or by their own instinct wanted drones reared. At any rate, and for whatever reason, it is very plain that, if there is any drone comb in the hive, at the usual time when the queen is fatigued of the repeated action of her spermatheca, she seeks for drone cells in which she lays without effort and finds them if there are any in the hive.

We were in the habit, between 1868 and 1880, shortly after the invention of the honey extractor and before the liberal use of comb foundation, of saving all the combs, drone or worker, whenever we transferred bees, and we placed this drone comb in the shallow super combs. But when we found that the queen would ascend into the super, just to lay in those drone combs, and when, at the same time, we became accustomed to using comb foundation in full sheets, we did away with all drone combs in any part of the hive. The queen then has no choice but to lay in worker cells, except in the few drone cells which she finds in corners or along the edge of a bottom bar. Thus we rear but very few drones, except in the colonies selected for that purpose.

In this way we have not found it necessary to use queen excluders, for we place queen excluders among the hindrances to easy ventilation which cause swarming. Some beekeepers seem to think that the only requirement to prevent swarming is to give plenty of room, and these same men are astonished when their bees swarm with plenty of empty combs. There are six or eight contributory causes to swarming, and perhaps some additional causes with which we are not yet acquainted; but one of these causes is certainly the lack of ventilation caused by entrance guards, drone traps, queen excluders, separators, etc.

When we have very strong colonies, we sometimes put on two extracting supers at once, at the opening of the season. This is rare, however, and we prefer to see them at work in the first super before putting on a second. The second is often put between the first and the brood chamber, causing an increase of activity in the bees who desire to fill the space between the two. Although my experience is not based upon actual scientific experiments, I am sure that there can be quite a difference in activity in the field workers of a hive, depending upon the more or less spreading of the crop within the hive, for one reason. I agree with the suggestion made by Hutchinson, the founder of the "Beekeeper's Review," years ago, when he said that bees would sometimes "sulk" when there was a crop in the field They do not exactly sulk, but they show more or less activity. An empty super placed under a full one is an inducement to activity.

Some people, after extracting, put the supers out in the open, for the bees to clean out the remaining honey. I never could see it that way. In fact, I would be very much incensed if any of our workers took that method of cleaning out the supers. It excites the bees to rob; it may supply food to bees that do not belong to us, neighbors' bees or bees in the woods or in house walls, flues, etc.: I believe in being neighborly, but not that far, and I would not thank a neighbor for unknowingly feeding our bees in that way. Besides, the cleaning out of the combs, by robbing, is to the detriment of the combs. The bees help themselves with fury (there is hardly a better word), and will even cut through cells to get to honey across the wall more quickly, rather than crawl around to it. After the combs have been licked clean, they are not **clean**, but actually more or less sticky. If the combs are given to the bees on top of the brood chamber, just at sunset, when there is no longer any danger of causing excitement, the bees cleanse them thoroughly and do not cut them up. They burnish the cells after repairing them, although they may not do this within the first 24 hours, but sooner or later it is done.

Some people object to giving the supers to the strong colonies, because they sometimes store in those supers the honey which they gather from them and it is not wanted there. To remedy this, there is a very easy way. It is to give the supers in which a little honey has been stored to some weak colonies that are not likely to have enough for winter.

Another good way to have the supers cleaned by the bees is to place them, as shown in the August number of this magazine, around some colonies which may take care of a dozen or so until the honey in them is entirely gathered up.

In this part of the country, western Illinois, there are two very distinct crops, though they may not be equally full, the June crop and the August-September or fall crop. Between these two crops we usually leave the supers on the hives, giving each colony what supers it is likely to be able to fill. But we need to keep an eye open, for sometimes a colony may swarm and be then unable to take care of several supers. It is usually warm enough at that time not to fear that the brood will be chilled by excessive ventilation; but there is always danger of the moths infesting combs that are not protected by the bees. In cool August nights, they may cluster around the brood and desert the supers. If there are many such happenings, moths may lay eggs on the crack of the super, on the outside, and the little larvæ, as soon as they hatch, will enter the hive, even through an almost imperceptible crack, and infest the combs, weaving their webs as they go.

So, during the summer, it is important to watch the hives that have more than a reasonable number of supers, more than they can readily occupy.

In the fall, after the last removal of honey, we may leave the supers on until the weather becomes cool enough to prevent the moths from doing any actual damage. This depends upon circumstances. When we find ourselves compelled to remove them early, in order to feed colonies which may not have retained enough to winter, or for any other reason; we pile them carefully in the honey house and spread a sufficient quantity of bi-sulphide of carbon at the top of the pile, to kill the worms. This is repeated in two weeks, in case some eggs have hatched. The bi-sulphide is put at the top of the pile, because its fumes go down, being heavier than air.

Care must be taken, when handling bi-sulphide, not to have a light or a cigar, or even a lighted pipe or cigaret in reach, as the fumes, mixed with air, make an explosive com-

pound. The quantity of bi-sulphide necessary is from one-eighth to one-fourth ounce per cubic foot of volume of supers.

Brimstone, or sulphur as many call it, is less expensive than bi-sulphide, but a different method must be followed when using it. The brimstone, ready to use, is supplied by druggists. We can also make wicks of it, by buying it in lumps or powdered, and melting it in an iron kettle over a fire, dip strips of rags into it. These rags are kept any length of time, till wanted for use. Place a small quantity in a dish on top of a brick, under the supers (for the fumes ascend), placing two or three empty supers between the burning sulphur and the first row of combs, to prevent the wax from being melted by the heat produced.

In either case, it is important to close the pile of supers well, so the fumes may be confined within the pile. But we have often burned enough brimstone within a honey house to kill all the flies in the room. An odor remains; but it is not injurious, and we have even kept sections of honey within the honey house without any damage from the odor of the burning brimstone, which usually disappears soon when exposed to the air.

In addition to the danger of moths, there are two dangers for supers of extracting combs, in a bee house in the winter. One of those dangers is mice. Mice will enter through a very small crevice, and there are probably more honey houses that are infested with them than immune. A single mouse may destroy a whole tier of combs, by cutting paths through them and nesting in them. We have seen this to our sorrow.

The other danger to combs in winter is from robber bees, if there is any honey at all in them. A honey house ought to be bee proof as well as mouse proof, but many of them are neither. A very good way to make the honey house bee proof is to line the walls on the inside with heavy roofing paper, tarred. Not only will the paper make a bee-tight joint, but its odor also discourages the bees.

There is one more danger to extracting combs; that is when there is American foulbrood in the apiary. Our first experience with American foulbrood was in early spring, and as the extracting combs were still in the bee houses, at each apiary, no disease was transmitted by them. But later, when the disease reappeared from the vicinity of careless beekeepers' apiaries, we found it necessary to melt down all supers from colonies that showed signs of disease.

Thanks to the energy of beekeepers' associations, there is a good prospect to do away entirely with foulbrood within a few seasons, as the Legislatures are taking strenuous means to eradicate it. Within a short time, we hope, foulbrood will be as rare as it used to be. I kept bees for 40 years before seeing any disease, and I hope our next generation may have the same good luck. We should be as safe from foulbrood as we are from smallpox. When I was a little child, most of the very old people showed traces of smallpox in their faces, but now, smallpox is a very rare trouble, thanks to vaccination. We cannot vaccinate our bees, but we can make them immune by destroying all germs of contagious diseases as soon as they appear.

AVERAGING 232 POUNDS AND INCREASE

By Will H. Gray.

We all know that bees in different places require different treatment for best results. However, a standard system has been worked out that gives very fine results over a wide range of country. From the moist sea air of the Pacific with 60 inches of rain through the dry belt with its 12 inches and up in the Kootenays, with high altitudes and long, deep snow and zero weather, and hot, late summers. From 85 hives scattered through these places an average of 232 pounds was obtained with a simple standard system that requires no cellaring or special winter packing, for the hives are just the same winter and summer, except for the tiered up supers.

Besides this good average these 85 hives made an increase of 33, which probably could have been equal to the total number of hives if every one had adopted the increase method which is an addition, or refinement, of the honey-getting method. One man in a good location averaged 434 pounds from four hives and increased four; another with four averaged 394 and increased four; yet another averaged 532 and increased four. This was in a good season (1922.)

All these results were accomplished by letting the queen have two 10-frame Langstroth bodies to lay in. On top of them went a queen excluder, and then the extracting supers. All the winter they have the two bodies, and as the upper one is nearly full of honey there is no shortage and the way they build up is astonishing. They are kept in a permanent hive case all the time and the advantages in summer are quite as much as in winter. This hive case, known as the Kootenay hive-case has three inches of space all around and the lower body is kept packed with shavings, etc., all the time. Sacks are put on top in winter and they hang down into the empty space between the walls. Expensive- did someone say? Not at all. The case consisting of top and bottom and two stories, not brood bodies, costs, in Vancouver, $3.50. Out of this you save the price of cover and bottom which you must have for any hive. You also save the cost of winter packing cases, which usually cost something. The outer stories are made of three-quarter in. shiplap and are no trouble at all to lift on and off. Think of the advantage when winter comes. No grouping into fours, and fighting between stray bees.

Now about the increase. Sheppard's dodge of a double screen wire clearing board with a bit of excluder zinc in the hole where the escape has been taken out is used. This clearing board, or increasing board, as we should now call it, has a slide to cover the hole so that it is quite bee-tight until the slide is drawn, which can be done from the outside. A frame of emerging brood and a couple of frames of honey are put over this screen which is on top of the supers. A new queen is introduced to this imprisoned nucleus, which has no connection with the hive below, as the slide is kept closed for a couple of days. When it is withdrawn the bees mingle freely and the nucleus builds up rapidly without diminishing the honey crop. After this new queen is laying you can go through the hive any time and remove the old queen and put the new one down, or what is better, make them change places. In this way there will be little chance of queen cells being started. If you like you can mate a queen from the nucleus above by keeping the slide closed and giving them an entrance by a tube or tunnel.

Every time the Kootenay hive case is mentioned in print a flock of letters come asking for full particulars and measurements. Well, here they are:

Equipment Required

Cover—Width, 26½ inches, outside measure; length 29¾ inches, outside measure; depth, 2¾ inches, outside measure.

Stories (at least four)—Width, 24¼ inches, outside measure; length, 27½ inches, outside measure; depth, 9¾ inches, outside measure.

Bottom (including extension alighting board and entrance block)—Width, 24¼ inches, outside measure; length 27½ inches, outside measure; depth, 7¼ inches, outside measure.

Entrance—Length 15¼ inches, inside measure; depth, 2 inches, inside measure.

Inside Fittings—At least four 10-frame hive-bodies with Langstroth frames and one wire queen excluder.

Material recommended for Hive-cases—¾-inch cedar lumber.

British Columbia.

Sweet Clover to Crowd Out Weeds

That the growing of diversified crops is a large factor in controlling weeds has been demonstrated in Kittson County, Minn., and other parts of the Red River Valley. Growing of clover and of rye is now largely taking the place of the former practice of summer fallowing in combatting the sow thistle (which has developed into a menace, as rye is cut before the sow thistle seeds), while the clovers, especially sweet clover, crowd out the weeds. Sweet clover has been rising rapidly in favor as a pasture crop, although it has been grown there for only about 4 years. In the last 12 years the plantings of rye and clover have increased from 8,000 acres to 60,000.

THE RELATION OF THE HONEYBEE TO THE ODORS OF FLOWERS

By John H. Lovell

BOTH beekeepers and biologists are generally agreed that the honeybee has a well-developed sense of smell. Plateau declared that the sense of smell was the principal sense which discovered to insects flowers containing nectar and pollen. Bright colored corollas might all disappear without diminishing the pollination of plants. But Plateau's views are far from conclusive and have been justly submitted to severe criticism. Floral odors are important, but not all-important. The comparative influence of color and odor on the floral visits of the honeybee is still very imperfectly understood, and much experimental work will be required to make it clear.

K. v. Frisch has shown in the following experiment that the honeybee perceives and is guided by odors. Four porcelain boxes 10x10x10 centimeters (a centimeter is about three-eighth of an inch), provided with tightly-fitting covers, were used. An entrance or round hole, 1½ centimeters in diameter, was made in the side of each box near the bottom. Honeybees were trained to enter one of the boxes to gather sugar water scented with fragrance of orange blossoms. The other three boxes remained both scentless and foodless. The boxes were placed at a distance of 10 to 20 centimeters from each other. During the training the position of the boxes was frequently interchanged, in order that the bees might not orient the place of the box containing scented sugar water relative to the position of the other boxes. After the bees had been trained, as described, four unused thoroughly clean boxes were substituted for those used during the training. In one of the boxes the fragrance of orange blossoms was introduced, but no sugar water. The other boxes remained both scentless and foodless. The boxes were observed for five minutes and the number of visits of bees to both the scented and unscented boxes noted. Their position was then changed and the number of visits again noted. During five such periods of five minutes each the following results were obtained:

	1	2	3	4	5	Total
Scentless _____	0	0	0	0	0—	0
Scent of orange flowers ____	20	26	11	28	28—	113
Scentless _____	0	0	1	0	0—	1
Scentless _____	0	0	2	0	0—	2

The results are very conclusive. The scented box, wherever it was placed, was visited almost exclusively while the scentless boxes received hardly any attention. Clearly, odor serves as a guide to bees in their visits to flowers. The experiment was repeated with many other odors and always with similar results.

The next step was to determine whether the honeybee could distinguish, when given the choice of a large number of odors, the special odor to which it had been trained. The bee was trained to visit a box containing the scent of orange-peel. Twenty-four other porcelain boxes containing various odors, as bergamot, cedar, iris, lavender, thyme, myrtle, rose, Eucalyptus, geranium, etc., were placed in two rows. One of the boxes contained the scent of orange peel to which the bees had been trained. During five minutes the number of visits to each box was observed. More than 200 visits were made to the box containing the scent of orange peel and more than 100 visits to the boxes containing the scent of bergamot and cedar. To the other boxes only from 1 to 8 visits were made. In a second experiment in which various rare scents were used, not a single visit was made to many of them. The bees selected the

Flowers of yellow daffodil have a sweet odor.

fragrance, to which they had been trained and those most similar to them, out of a great number of fragrant odors offered them with noteworthy assurance.

As the result of many experiments v. Frisch reached the following conclusions: The sense of smell in the bee is not so different from a normal human organ of smell, as might be expected from the difference in the organization of these two forms of life. All the substances investigated which are odorous to us are also odorous to bees. All which are odorless to us are also odorless to them. Substances which smell strongly to us, smell equally so to them. It was found that, in a row of odors, the keenness of the smell of man and of bees was of the same value. Odors which to us are similar were confused by the bees; this was particularly true of substances in pairs, where the odor is practically the same in spite of a slight difference in their chemical composition.

Here lies the essential importance of flower odors. By the aid of the different odors characteristic of plants the sure recognition of similar blossoms is made easy for bees and other insects which visit flowers. **"Flower fragrance is a 'trade mark' for the bees, and perhaps the mightiest trade mark the flower possesses."**

(The experiments of K. v. Frisch are described in the following papers: Uber den Geruchsinn der Biene und seine Bedeutung fur den Blumenbesuch, 1918. Zur alten Frage nach dem Sitz des Geruchsinnes bei Insekten. Versuche an Bienen, 1919. Uber Sitz des Geruchsinnes bei Inseckten, 1921. Uber die "Sprache" der Bienen, 1923. Sonderabdruck aus dem Handbuch der biologischen Arbeitsmethoden.)

The honeybee doubtless responds better to a known odor than to one which is unknown to it. In v. Frisch's experiments many unusual odors received not a single visit. The Peckhams placed a dead wasp in the grass so that it was entirely hidden. Five wasps settled above it, and after they had carried it away the place was visited by several others, while the spot on which two wasps were killed drew 9 wasps in 15 minutes. Thus they seemed very keen of scent where animal matter was concerned, but the powerful oils of peppermint and wintergreen, although noticed, aroused little attention. No importance can be attached to experiments on the olfactory sense of the honeybee, in which strange corrosive essential oils are employed, which act as irritants.

But it is very easy to over-rate the importance of floral odors, as has been done by Plateau and others. As is shown in the following experiments made by myself, they may exert much less influence than bright colored petals. Two clusters of flowers of the common pear, growing side by side, consisting each of 8 flowers, were observed for 15 minutes and 16 visits of honeybees were noted. The petals on the flowers of one of these clusters were now removed. During the following 15 minutes the adjacent cluster, which still retained its petals, received 11 visits, while not one was made to the cluster without petals. In one instance a bee hovered over it but did not alight. It might have been supposed that the odor exhaled by the evaporating nectar of the denuded blossoms would have attracted the bees, which were only an inch or two distant; but their visits were evidently determined almost entirely by the presence of the white petals.

In another experiment two groups of flowers of the common borage **(Borago officinalis)**, about 6 inches apart, were selected. One contained five flowers, the other four. During 10 minutes the first received 15 visits from honeybees, the second 13 visits. The blue corollos and the cones of black anthers were now removed from the five flowers of the

first group. During a second 10 minutes the first group of denuded flowers received no visits, the second group received 7 visits. With a lens I examined the defoliated flowers, and in two of them found 8 or 9 small drops of nectar, so that a bee would have been well rewarded for a visit. Here again the bright coloring of the flower was more important than the odor in inducing the visits of honeybees.

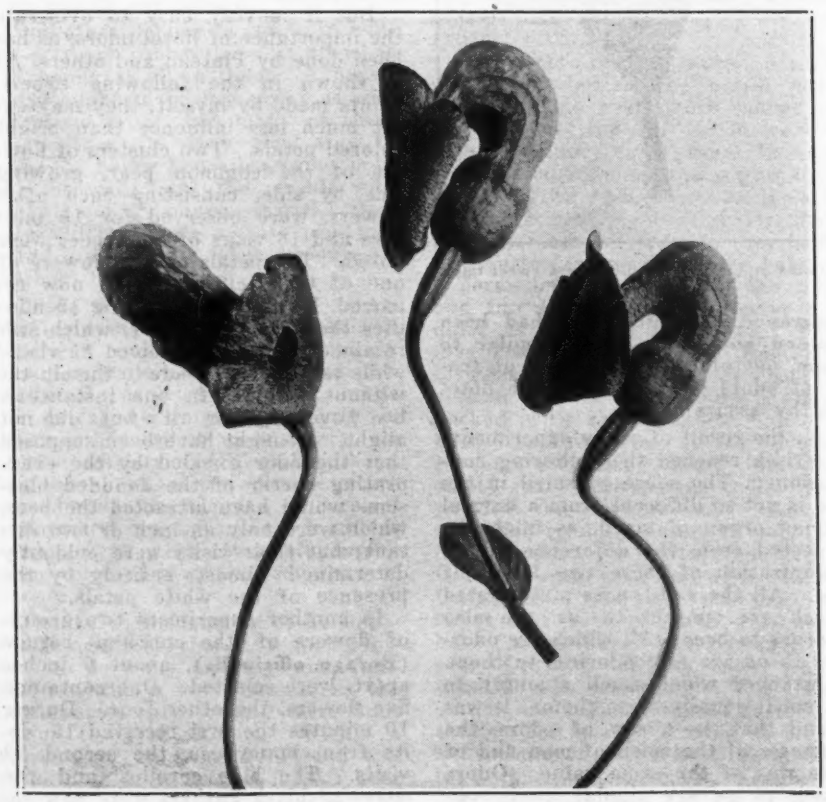
In general, according to Bouvier, we may say with Perez that "for distances at which sight cannot be any help, the bees, and without doubt most insects, are guided in their search for flowers by odors transported by the currents of air. . . . . When the distance is short enough for the sense of sight to intervene, the insect flies straight to the flower whose appearance attracts it, but this appearance is enough in the absence of any probable perception of perfume when the accidents of flight bring it near the flower. It alights then if the perfume is one which pleases it; if not, it leaves."

Many beekeepers have expressed the opinion that honeybees are drawn to distant fields of flowers by their penetrating odors. This is not improbable, but there is, unfortunately, very little experimental evidence to support this belief. But it can be shown easily that moths are attracted from a distance by strong odors. Fabre found that if the females of **Saturnia** and **Bombyx** were confined in an open box, the males came even against an adverse wind. But if the females were placed in a box, which was then hermetically sealed, the males did not come. Forel and others have made similar experiments. Moth-flowers emit strong odors in the evening, which can be perceived at a great distance, and there is no doubt but that moths are attracted to them by this means. Kerner marked a hawk-moth lightly with cinnabar, and placed it 900 feet away from a honeysuckle in bloom. When twilight fell the moth moved its feelers, or antennae, a few times and then flew like an arrow to the honeysuckle. The same observer noticed on the Danube River the scent of flowers of grape-vines 300 yards away on the bank above him. The fragrance of basswood bloom is more powerful 100 feet away from the tree than near it. Carrion-flies perceive putrefying odors from afar, and odor is for them the principal allurement.

It certainly seems reasonable to suppose that honeybees often follow odors a considerable distance in search of nectar. A beekeeper at Burlington, Ontario, relates that one day he visited one of his outapiaries and found everything quiet. The next day a south wind was blowing, and the apiary was in an uproar and in the midst of a honey-flow. On inquiry he found a buckwheat field of 12 acres, 2½ miles to the south, where the bees were gathering nectar. As they were compelled to fly over two belts of woodland, he was convinced that the bees would never have found the buckwheat had not the wind blown the scent in the direction of the bee-yard. Ph. J. Baldensperger states that around Jaffa, in Palestine there are immense orange groves, and that the air for miles is filled with the fragrance of the flowers. Bees from apiaries three miles north of Jaffa visit the bloom in great numbers. Observations of this general nature are fairly convincing, but not wholly conclusive, since no control experiments are possible.

But it must be remembered that no matter how powerful the fragrance of a flower may be, it will not attract the continued visits of bees, if no flower food can be obtained. The great fields of buckwheat are in the afternoon almost completely deserted by bees, notwithstanding the nectarless bloom exhales the aroma of honey. This is also true of many cultivated exotic flowers, which are either nectarless, or have the nectar so deeply concealed that it is beyond the reach of the honeybee. Occasionally a honeybee may be seen vainly trying to obtain the nectar of the sweet William, but not succeeding, it flies away, not to return. Over the larger part of the area in both hemispheres on which red clover is cultivated the abundant nectar lies at the bottom of a floral tube a third longer than the tongue of the honeybee, and the bloom is chiefly pollinated by bumblebees. It is only in localities in which the floral tubes are shortened by drouth, or owing to specially favorable conditions of soil and climate, nectar is secreted so freely that it rises in the tubes until it becomes accessible, that the flowers are often visited by honeybees. This also happens in the case of other bumblebee-flowers, as with some of the horsemints **(Monarda)**.

Honeybees prefer agreeable odors, and it is noteworthy that the hundreds of bee-flowers belonging to the mint, figwort and legume families have pleasant scents. Flowers with repulsive odors are as a class seldom visited by bees, but this rule does not hold good if it is for their advantage to visit such flowers. Doolittle saw honeybees frequently entering the hoods or spathes of the skunk cabbage for the purpose of gathering pollen. In California the honey stored from rabbitbrush **(Chrysothamnus nauseosus)** is so dark and has so disagreeable an odor that even the Indians will not eat it. At night its scent can be perceived at a great distance. The staminate flowers of the Tree of Heaven **(Ailanthus glandulosa)** have a disagreeable odor and yield a large amount of ill-flavored honey. Tarweed **(Hemizonia fasciculata)** is abundant in southern California and is the source of a dark honey which has a disagreeable scent like the plant. The poisonous honey of western North Carolina has both a repulsive odor and taste.



Flowers of Dutchman's pipe have a repulsive odor and are pollinated by flies.

Sanders in New Work

J. G. Sanders, formerly Director of the Pennsylvania Bureau of Plant Industry, and under whose office all of the beekeeping work in Pennsylvania was conducted, is now Manager of the Spray Oil Department of the Sun Oil Company, with headquarters in Philadelphia. Perhaps, in his new capacity, he can be of help in the difficulties that beekeepers and horticulturists mutually encounter over the spray question.

EXPORTING AMERICAN HONEY

By J. Skovbo

WHEN one of my brothers in the spring of 1922 decided to cross the big pond and spend a year in Denmark, we agreed, if conditions seemed favorable, to attempt marketing our alfalfa honey in Europe, something we had long contemplated; and when the unusually cold summer in 1922 resulted in an almost complete failure of honey production all over Northern Europe it seemed an ideal time to carry out the experiment. According to the Danish bee paper, "Tidsskrift for Biavl," the honey crop for 1922 was the smallest known for 55 years. (Our government reports, as well as our bee magazines, failed to inform American beekeepers of this European honey failure until early in the winter, when mention was made of it in connection with reports of the shipping of Australian honey to Europe).

In planning exporting honey we had always considered that for such purpose the best could be none too good, and consequently arrangements were made at once for shipment of 100 cases of our very finest water-white alfalfa, for which we, at the time, were asking 10 cents f. o. b. shipping point; shipment was made by steamer from Portland directly to Copenhagen via the Panama Canal. The trip was expected to take two months, so we hoped to land the honey there in time for the Christmas trade. We were surprised to learn that the cost of ocean shipping was only 80 cents per 100 lbs. (on the same honey we paid 69½ cents per 100 lbs. for shipping 200 miles on railroad on a water grade); other expenses, such as insurance, transferring into export cases, cartage, etc., brought the total cost of shipping from Hermiston to Copenhagen to about 2 cents per pound.

In the meantime samples had been mailed to my brother and he set to work trying to interest dealers in the product; the results he recorded in frequent letters, and it soon became apparent that, like the Irishman who was getting married, he was losing his enthusiasm. Following are a number of extracts from these reports, but first let me state for the reader's enlightenment that a kilogram is equal to 2.2 lbs American weight, and that while the pre-war value of the Danish krone used to be about 23½ cents, its present value is around 18 cents.

Danish honey was selling Kr. 4.00 per kilo., most dealers refusing to consider American honey at all; while they could not explain wherein the Danish honey was superior to American, they insisted that their customers demanded the former. He was learing that the dealers were used to making a very large profit, 100 per cent being nothing unusual; they also have a strong organization through which they receive reports and advance information on market conditions; they are also protected by a high license. He found that, to sell well, honey must be granulated; even when put up in small jars this is the case, and for that reason packers would really prefer to buy honey in barrels rather than in cans, as the latter either have to be cut open, or the honey melted. The question of how this granulated honey was being put into jars, which for a while had puzzled him, was solved when he discovered that the honey was run through a meat grinder and in that way forced into the jar.

One dealer to whom sample was submitted would buy Danish honey for Kr. 3.50 per kilo., but would not buy American at all; in fact, he would not believe that ours was pure honey, insisted that it must be artificial honey made of glucose and sugar; he would bet that it would never granulate. He furnished a list of wholesalers that might be interested; one of these advised that he was offered California honey for 10 cents per pound, delivered, the buyer to pay the import duty; this honey compared well with our sample.

Bakers are using some honey, but are not willing to pay more for real honey than they can get artificial honey for; large quantities of this latter product is being sold, as the price is low. Drug stores handle large quantities of good quality honey.

A beekeeping acquaintance, after examining the sample, stated that it was finer honey than could be produced in that country, but explained that it would have to be granulated to sell, also the flavor was possibly too mild for the taste of the public. In this letter Brother sums up his impressions as follows:

"There will be more profit in exporting lower grades of honey instead of white or water white. There may be a chance of selling our granulated honey in paper boxes. The margin will be small until a trade is established. As American honey does not enjoy a favorable reputation, no effort should be made at this time to sell under our present label, or in other ways emphasizing the 'American' part."

In January a letter stated that the boat was not expected to arrive for another month. Honey prices were fast declining, as the market seemed to be overstocked. California honey was quoted by jobbers at Kr. 1.60 per Kilo., Australian honey being offered at similar prices.

A letter dated February 6 announced the arrival of the boat at last. It was found that many of the cans were leaking, because of bursted seams; four cases were entirely empty; altogether about 600 pounds were found to be missing, and while we had believed ourselves fully protected against such losses by buying insurance, we now learned that the insurance only covered total loss, and did not apply in the present case, as long as the cans and cases were on hand. The Steamboat Co. refused any responsibility in the matter. The market was still declining, and in addition the exchange had taken an unfavorable turn because of the Ruhr trouble. Many dealers were dumping their holdings on the market at loss. We held on for a while and hoped for improvement.

April 1st. The honey all disposed of; the price being in most cases Kr. 1.20 per Kilo, we to pay the import duty of 10 Ore per Kilo. in addition some expenses had accumulated, such as storage, traveling expenses, etc., amounting to about Kr. 300; after exchanging the money into American coin, and subtracting the two cents per pound advanced for freight cost, found a balance of $726.50 left for the 12,000 pounds of honey, or a fraction over 6 cents per pound f. o. b. shipping point.

One paragraph in this letter may be enlightening: "I secured a sample of heather honey with plenty of 'aroma'; when you examine this, and when you learn that this honey will retail easily for Kr. 3.00, when yours will not bring Kr. 1.50, you will understand what grade of honey this trade demands; your darkest wild buckwheat would be easier to sell, because it at least looks natural. Another thing is that your honey granulates too coarsely; it should be stirred up during the process of granulation in order to break up the crystals. Dealers everywhere told me the honey is too light, too mild in aroma and flavor; looks too much like artificial honey; is too coarse."

After revealing this family skeleton to the public gaze, the writer desires to emphasize the following points:

1st. The Danish standards of honey are almost the reverse of the popular ideas in this country as regards color, flavor and granulation.

2nd. While America undoubtedly is the leading beekeeping country in the world, our honey does not enjoy a good reputation in the European, or at least the Danish, market. This may have been caused by exporters not understanding the local conditions, as in our own case; it may also be the results of continual exporting of inferior honey instead of building up a demand for our better grades.

3rd. In Europe, honey is far more appreciated than in this country; although a laborer must work a whole day to earn the equivalent of a quart of honey, many hundred tons are imported every year; in contrast, a laborer in this country could buy two gallons or more with his day's wages, but usually he fails to buy even a pint a week.

Oregon.

Interior of Iowa packing case.

THE IOWA PACKING CASE

By F. B. Paddock, Ames, Iowa.

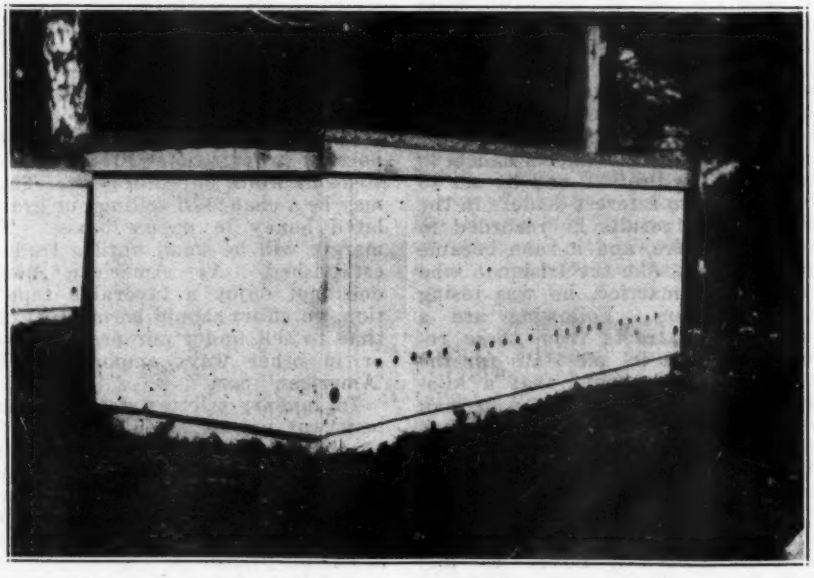
THERE are many who contend that during the past few years, too much attention has been given to the problem of better methods of wintering bees. It is hard to take this attitude after consulting the figures for any state, and particularly Iowa, where the statistics record an average winter loss ranging as high as 18 per cent. It is doubtful if any other industry could prosper after suffering such an annual loss. With the advent of the Modified Dadant hive, a new phase of the wintering problem was presented. In their home yards, with the original Dadant hive, the practice of outdoor wintering has been adopted. The Dadants have developed a system of wintering which involves a minimum expense and a maximum result. It is needless to say that any system of protection should best be based on local conditions after supplying general principles.

In Iowa the fundamental problem is the advisability of wintering in a cellar or out of doors. The packing case method of wintering has been a comparatively recent event and so we find the common method in this state is to winter the bees in the cellar or leaving them out of doors without any protection. In the extension work which has been conducted by the Iowa State College, the specialists have been confronted with the problem of getting the small beekeeper interested in winter protection. Under these circumstances, it is hardly advisable to advocate cellar wintering when the average apiary is from ten to fifteen colonies of bees. Furthermore, Iowa climate must be taken into consideration, and we find that generally the bees have a severe period of exposure preceding the time at which it is safe to take them into the cellar, and the spring is usually extremely adverse for a long time after the bees must be taken out of the cellar. It is only logical then to advocate outdoor protection in the form of packing cases.

The Phillips quadruple case has been advocated for some time for use with the Langstroth hive. In the leading periodicals, we have become acquainted with several modifications of the packing case during the past three years. Most of these so-called improvements have been tried out and found to be of doubtful value. The particular problem in the case of the Modified Dadant hive, is the fact that one hive body is supposed to contain ample space during the winter and spring building up period. Furthermore, space for the most vigorous queen is provided in addition to the storage space. Therefore, the packing case for this type of hive does not require room for two stories.

In so many of the packing cases, errors have crept into the constructions which have resulted in a greatly reduced sufficiency. In the case proposed for the Modified Dadant hive, certain modifications have been made which seem to be fundamental from a construction standpoint. The bottom board is made of 2x4's which are placed immediately under the end of the floor. The ends of the 2x4 are closed with 1x4. Thus a draft of wind under the bottom of the packing case is prevented, which allows for a reduction in the packing underneath the hives. The material for the body of the case is made so that the joints are perpendicular instead of horizontal. Any moisture which tends to enter the joints between the boards, will follow the cracks down the case, and off. The nailing pieces on the front and back are 2x2, placed flushed with the top, and ⅞ inch from the bottom, allowing the body of the case to telescope the bottom. The nailing strips on the ends, which are 2x4, are placed correspondingly with the 2x2 on the other side. These 2x4's are cut to receive the 2x2 of the sides. In addition, there is a strip between the 2x2's, all of which tends to make a water tight union or corner of the sides with the ends. The cover is made on a 1x4 frame which telescopes the body of the case. The top may be thin material or shiplap. The size of the case is such as to permit covering the top with one strip of 36-inch rubber roofing. The rack on which the colonies are placed is made of 1x4 and 2x4.

With any packing case which has been developed in the past, the most difficult problem has been that of securing a proper fastening device for the corners. With this case, a machine bolt ⅜x4 is used. Provision is made so that the bolt can go through the side into the 2x4 nailing strips on the ends and a large hole is bored in the 2x4 to accommodate the nut of this bolt. The bolts can be tightened from the outside, so that a joint very nearly water-proof is secured. In the spring at unpacking time, the bolts can be loosened from the outside without any difficulty. The tunnels are of individual pattern. The improvement is in the pro-



Paddock's Iowa Packing case.

jection into the entrance of the hive which holds the tunnel in place while the colonies are being put into place. The entrance holes provided are five-eighths inch. To prevent the entrance of mice during the fall period, these holes are covered inside with one-quarter inch hardware cloth. A strip is nailed at the proper place below the holes on which the tunnels can rest. The case is constructed throughout with eight-inch shiplap.

In a selection of the packing material, one must consider first, accessibility. In Iowa we find that leaves are not generally available, and at best, require considerable expenditure of time to accumulate. This item of time is a big factor with the farmer beekeeper. Shavings or sawdust are not accessible, as a rule, even at the lumber yards, and the price is entirely too high in many cases. In view of these facts, it was decided to try oats for packing material for bees in the case as described above. This case calls for four inches of packing beneath, five inches in the sides and six inches on top. In the one season of experience, the oats gave satisfactory results. With the leaves, oats or shavings, the colonies were weighed in and out to determine the value of these materials. On an average farm, oats are usually available in the fall and usually worth less at that time than in the spring. So the farmer has available, storage space for oats which are at a premium during the heavy working season in the spring. In the use of oats the problem of taking care of packing material from one season to another is entirely solved.

The cost of the packing case is $6.50 for material and $3.50 for construction, making a total initial cost of $10.00 for the case. This case will winter four colonies of bees and a depreciation is figured at 10 per cent, which means that the cost of wintering the bees one year in this case is 25 cents per colony. The cost of the material is not figured in, since the oats have more value in the spring than in the fall.

More beekeepers are becoming interested in protecting their colonies, and after satisfactory results in this case in our own yard it is given to the other beekeepers for trial.

THE HUBER LETTERS

Treatment of Bee Stings—Condition Necessary for an Observing Hive—The Killing of Drones

Lausanne, Aug. 4, 1831.

Have you been stung, my dear Elisa? I guessed it, or rather felt it, when reading your last letter, and I regretted my failure to put enough weight upon the precautions that you must take against the bees in those narrow observing hives in which their instinct is so greatly thwarted as to cause their ill-humor. I should have given you the only remedy which I have seen Burnens use, and which was not of his own invention. He first extracted the sting from the wound, for he had very well noticed that it continues a spasmodic motion after it has been separated from the body of the bee, widening the wound and rendering it more painful. He would then rub the wounded spot with freshly cut grass; this pressure forced out some venom and lessened the swelling and the pain. You must remember it for a future time.

The Observing Hive.

To make sure of seeing the queen, the narrow hive should not permit her to disappear from our eyes for a single instant, so the panes of glass which enclose the comb must not be more than 1¾ inches apart; the average thickness of a comb being about an inch, the rest of the space, divided between the two sides, will furnish to the bees a space sufficient to cover both sides of the comb without giving them enough room to cluster together so as to incommode the observer. I advise you to keep within these limits, which have always been successful with me. When you build another observing hive, do not inspect them until they have strengthened everything in their new home and are accustomed to it. I advise you, also, in order to protect yourself against stings, that the hive be enclosed in a glass closet, so that the bees be not able to go in and out except by a passage made in the window sill, which will not prevent the latter from being opened or closed; the bees will then be able to go back and forth without being disturbed and without annoying you.

About Drones

Let us now come back to our conversation concerning the drones of the species; they are worthy of our attention for a moment. They are, like all the young of the bees, the object of the most assiduous care during their early youth; the common workers are in charge of this and acquit themselves worthily. You know that they have neither legs nor feet and that, in order to crawl about their cell, they must twist themselves around a spiral, with the help of their rings, the folds of which serve as feet. This slow way of crawling is so well proportioned with the space to be traveled that the young larva terminates it only when it reaches the mouth of the cell, at the time when it is to transform into nymph, when it no longer needs to eat and can get along without the care of the kind workers who have so far served it as nurses. But their work is not at end; the adult male depends upon the care of its guards; not one of his organs can help him to feed himself, or to do any work whatever. You must therefore not accuse him of laziness when you see him idle; nature wills it so. The hive is only his bedroom; his dinner is always ready. Our greatest lords never had more waiters doing their work and hurrying to help them; the care of their nurslings occupies them constantly. One cannot watch them a single moment without seeing some bees busy rubbing them or brushing them with their proboscis, which serves as a broom (a more proper name for this instrument than the name which has been given to it, for the proboscis is not a sucker).

Grant a little more attention to these little beings. As they emerge from their childhood, they are, as you see, dependent upon their keepers; but they have liberty in addition; they can, without opposition, emerge from the hive and return at any hour. In the fine days it is from nine to ten o'clock in the morning until four in the afternoon that you will see them run, fly and sport about their home; no winged insect is as lively or as happy as a drone. Their number may be as great as a thousand to twelve hundred in each colony, and their very sonorous humming fills the atmosphere and cheerfully animates the surroundings of our apiaries. This condition usually lasts three or four weeks from their emergence from the cell out of which they hatched, and gives to the observer the sweet idea of a happy people; but you probably know that this will soon change; the first time I saw it I was very much impressed. To see these same workers pass almost suddenly to hostile demonstrations towards creatures upon which they had lavished that which is most tender in maternity, to see them chase them out of their retreats with the greatest fierceness and force them to descend upon the alighting board to suffer death! This distressing spectacle could be still more so; it came to that when I made sure that the proscription of the males was extended to the eggs, the larvæ and the nymphs, which might have perpetuated their race and which were all destroyed under my eyes. It was then with good reason that Mr. de Reaumur had called this happening "a frightful massacre, a horrible slaughter."

I do not know whether you have seen all this with your own eyes, my dear Elisa; spending the summer in the country and having hives of your own, you will witness scenes such as I have just described; my duty is to cause you to see things just as they are and not allow access in your mind for unjust prejudices.

It is usually in the beginning or in the middle of summer that the bees change in their behavior and that the drones of the race become the objects of their hate. Let us examine whether the time is well chosen.

If the drones were killed sooner, the order and the regulation of the hives might be deranged, as regards fecundation; if they were killed later, the crops of the hives might suffer, the workers then not having enough time left to fill their storerooms with honey and supply new stores for those that would have been consumed by the drones, who have become at that time useless members of the society. The time chosen by the bees to kill them is therefore the best. The second

blooming of the meadows, that of esparcet especially, as well as that of buckwheat, permit them to gather still as much food and more than has been consumed by the drones during their short stay among the workers who have killed them. The destruction which aroused us, instead of being as grievous as appeared to us, is advantageous instead, since the safety of the race results from it; the wish of nature is thus accomplished, as it is generally. That which happens, in the hives that are under your control, happens in all the hives in existence.

The first time that I witnessed it, when I could no longer have any doubts upon the violent death which they suffered, being ignorant at that time of the generality of the law of which I saw the effect, I thought, as Mr. Bonnet did, that Reaumur might be mistaken and that the massacre of the drones which he had so well described might be but the result of an accidental cause, still unknown. Might it not be (for example) that the drones thus observed should have acquired some fault or vicious habits, with age, that caused them to be disliked by those same bees which had been thus far their faithful nurses? This gratuitous supposition was soon abandoned by me when all my country neighbors informed me that this fact, which astonished me and almost scandalized me, was not thus considered by them, since they knew already, by tradition, that this massacre, which I saw, took place every year, at the same date and in all the hives of the country. The entire masculine gender could not then be suspected of the infirmity of advanced age as a cause. Among the great number of drones, of which none was spared, there were doubtless some very young ones which had become adults only for a few days or a few hours; but that which proved, still better, that their proscription was not caused by age and infirmities resulting from it was that the eggs and larvæ of all ages were taken out of their cells and thrown to the ditch. I learned afterwards, through my correspondents and through the works that treat of bees, that the proscription of the males and their extermination were known everywhere and that I was probably the only one to be astonished of it. This fact, unknown to me until then, assumed a new aspect in my eyes, that of a law of Nature. But what was its purpose? In order to know this, I needed to know its results, and I gave my attention to it. I interrogated the farmers who kept bees and whose experience worthy of respect could give me information that my own efforts would not secure for me. The majority of them said to me that their bees, usually very tractable, became less so at certain times, and that they were never meaner (these are their own words) than when they were richest—that is, when honey was plentiful in their storerooms. It was, according to these men, to defend their treasures and prevent them from being dilapidated by the males that they killed them.

I will give here only the result of numerous observations which I made, and from which I am much inclined to believe that the years of abundance or of dearth are not the aim or the cause of the massacres of the drones, which are committed by the bees almost periodically in all the hives, for I have seen these cruel despatches take place in hives that were not rich and had hardly enough honey for their daily subsistence. I persist, therefore, in the belief that there is another cause for the phenomenon observed in the behavior of the bees, but if we cannot define it we are allowed to judge of it by our sentiments, and it is to this that I send you, my dear girl; the ideas of kindness, greatness and wisdom do not permit me to doubt of your being on a path upon which we will meet.

THE "SPREAD" OF HONEY PRICES

By E. G. LeStourgeon

IN discussing the marketing of honey, readers of the American Bee Journal will note that I have always laid stress upon the value of protecting the established channels of trade. I am really convinced that those co-operative movements that have failed to recognize and utilize the regular trade channels have not been successful. Those that have done so are the ones that have survived. There is a definite need and a definite place in the distribution system for the wholesaler and the retailer. Producers must learn that these are necessary agencies for the marketing of their product and must protect them when building up their local trade or selling their product direct.

In the days of barter, where each man produced but little and exchanged whatever surplus he may have had with his neighbor, there was no need for any middle man. As the full development of the division of labor only reaches its highest point where a dense population occurs, we still find all of the steps in the development of the marketing system existing side by side, and it is necessary that all of these be taken into consideration when a discussion of honey prices is made.

In other words, a beekeeper or a beekeeping organization may operate in a city where a wholesale grocer is handling his product and where retailers have it on their shelves and are selling it to the consumer. He must recognize and protect the rights of each of these and must have three prices at which to sell his honey. Say that his honey in bulk car lots is quoted at 10 cents per pound. It will cost the producer about 2 cents per pound to can it, label it, and deliver it to the wholesaler. This 2 cents per pound is called in trade parlance "the assembling charge." The price, then, of this 10-cent honey (bulk honey at the apiary) would be 12 cents, delivered to the wholesaler. The average profit or handling charge of the wholesaler is 12½ to 15 per cent, and this wholesaler would likely sell this honey to the retailer at 14 cents per pound. The retailer, in turn, would add his profit or handling charge when selling to the consumer. The cost of doing business by the retailer is greater and his margin of profit ranges from 20 to 30 per cent, according to the risk entailed in handling a given commodity. In the case we are considering he would likely sell this honey at 20 cents per pound, or $1.00 for a five-pound pail.

Now it would not be a bad idea to review the functions of the various agencies who go to make up the "channels of trade" and show why their profit should be protected and their services utilized by the producer.

The first cost of marketing is to properly prepare the product. This is, in the case of honey, the cost of tin or glass packages, bottling, labeling and transporting to a trade center. For the purposes of illustration in the case of our 10-cent honey we have placed this charge at 2 cents per pound.

The wholesaler came into existence as the result of a definite need. The wholesaler acts as a reservoir where products are equalized in point of distance and seasonal distribution.

It is the wholesaler that makes it possible for the retailer to obtain his wares at a reasonable price and to maintain a constant stock throughout the year. No retailer can afford to purchase directly from either the producer or the assembler, as freight rates and the added cost of storage are greater than any profit he might hope to make. Upon the wholesaler falls a large amount of expense that is seldom taken into consideration by the producer or ultimate consumer. The buying of carload lots and storage, for long periods of time, involves an investment of much money, and the interest upon it must be charged to these long-time storages. The wholesaler may lose because of decline in prices, and this risk must be accounted for in the shape of insurance—in the form of per cent additions to the price. Losses by fire and theft are to be considered and must be paid for. The wholesaler does not do a mail order business. He must send out trained salesmen, who visit the old customers of the firm and find new ones. These men are highly trained workmen and must receive adequate compensation. In addition to all of these expenses, the wholesaler has to maintain n extensive storage system, which is perhaps his greatest expense. In our illustration we have added another 2 cents per pound to our 10-cent

honey to pay the wholesaler for his services. This is fair enough and is really earned. Only because great volumes of sales are made by the wholesaler can he give his service so cheaply.

The retailer is but a smaller reservoir which disperses its supply to the ultimate consumer. Because of the wholesaler, the retailer can draw his wares in smaller quantities, and as he disposes of them quickly he does not have the expense of long-time storage. He has a smaller expense for sales force and a proportionately smaller one for storage than has the wholesaler, but he has an additional expense that must be taken into consideration. The expense of making a sale of a single pound is practically the same as making the sale of a carload, and as the retailer sells only in small quantities his expenses for sales are very great, portionately. Because of the fact that he carries so many articles in stock, his investment is large. On account of the variety of materials carried, his insurance rates are high. Differing from the wholesaler, the retailer is generally in such a position that he must carry credit accounts which, with their uncertainty and long duration, add to the retail business a definite item of expense.

The retailer adds the most to the cost, as his profit must be a charge against each individual sale. He sells this five-pound can for 20 cents per pound, or $1.00. We have this result now:

Five pounds honey at 10c	$ .50
Cost of can and assembling	.10
Wholesaler's gross profit	.10
Retailer's gross profit	.30
Cost to consumer	$1.00

As the size of package increases, the cost of handling decreases on a per pound basis. Take a five-gallon can for an example:

Sixty pounds honey at 10c	$6.00
Cost of can and assembling	1.20
Wholesaler's gross profit	1.00
Retailer's gross profit	1.40
Paid by consumer	$9.60

In other words, in a 60-pound can, our 10-cent honey would likely reach the consumer at 16 cents per pound, instead of 20 cents, as in the five-pound pail.

As the retail package gets smaller the costs will correspondingly increase. To pack the 60 pounds of honey into 60 one-pound glass jars will entail the purchasing of glass and labels and the labor and loss incident to packing. Take an example as follows:

One pound of honey	10c
Freight, glass, label, labor	16c
Wholesaler's gross profit	5c
Retailer's gross profit	9c
Paid by the consumer	40c

The producer must constantly keep in mind that he is largely responsible for maintaining the price set by the wholesaler and the retailer, and that if he is to profit by their labor he must, if he sells direct, recognize and repeat their prices. The greatest difficulty, in holding the honey price, has been that the producer would sell a portion of his crop to an assembler and then, taking advantage of his acquaintanceship among wholesalers, sell the remainder of his crop directly to the wholesaler at the price offered him by the assembler, or, what is even worse, unthinking producers have very often sold directly to retailers or to the ultimate consumer at the same price the wholesalers were paying. This, of course, brings about a state of feeling on the part of retailers and wholesalers, and these men are not very anxious to hustle at all, and if they do not handle honey, the marketing system breaks down, advertising no longer exists, and the producer, by his unfortunate sale of honey, has committed trade suicide.

The point I am trying to make is that, if a beekeeper, for instance, sells his honey at wholesale in bulk quantities at 10 cents per pound, he ought not to sell to the retailer and the consumer at this same price. In selling to the retailer he ought to protect the wholesaler, and his charge should be about 14 cents. If he sells direct to the consumer in small lots, he ought to protect both the wholesaler and the retailer, and he should sell his honey at 20 cents. If a producer acts also as a merchant, he should take the merchant's wages in addition to his wages as producer. If he fails to do so and cuts under the price the merchant can afford to sell for, he will discourage the sale of his product through regular trade channels and paralyze the demand and distribution of his product.

"Lone Star Honey" is never sold direct to the consumer, nor even to the retail trade. "The laborer is worthy of his hire," and our great group of loyal wholesale grocer friends, scattered over a half dozen states, are worthy of being protected in the sale of our product. If an order comes to us direct from a retailer, we write him a courteous letter asking what jobber he desires the honey billed through. The wholesale people are human, as you and I, and they appreciate loyalty and cooperation on our part.

Beekeepers often complain that the "spread" between the price the producer receives and the price paid by the consumer is too great. It is time that he should cease complaining of this "spread" and begin to study the question of distribution from the point of view that ages have gone into the building up of these trade channels and that each member in the chain performs an indispensable service. The "spread" does not really matter to the producer if a safe, dependable demand is created for his product. It need not worry the raisin grower that a very few raisins in a prettily printed box are retailed at 5 cents per package in every ball park. He need not sit and figure that, at this rate, someone is paying five or ten times more than he received for his raisins. He should be and is glad that, by this means, his association has found for him a safe, dependable market for all the raisins he can produce. The man who buys the 5-cent package buys more than raisins. He employs a printer, a paper box factory, a large packing plant, a transportation system, and has used the services of all the individuals in the channels of trade.

Beekeepers also must forget to watch this "spread," except for the purpose of respecting and protecting it. If every beekeeper in America would today resolve to protect the prices at which his wholesaler and retailer must sell his product, there would be, within a year, honey on the shelves of practically every store, and the demand for honey would be so great that even in our years of heaviest surplus we could not begin to satisfy it.

San Antonio, Texas.

PROPER PROPORTION OF HONEY IN RADIATORS

By N. E. France.

When the subject of using honey in radiators came up last fall it seemed of so much importance to me that I made an effort to have a large number of cars equipped with honey and water to test the matter out on a sufficient scale so as to give definite results.

There were over sixty cars using honey in my vicinity last year.

With less than half honey when the temperature registered 18 to 20 degrees below zero, some makes of cars with small tubing in the radiators had trouble.

Where at least half honey was used and the honey and water were well mixed and slightly boiled, there was no trouble at 18 degrees below zero.

A Hudson car with half honey not well mixed had trouble and we added a small amount of alcohol and the car worked fine all through the rest of the winter and still had the honey in the radiator when spring opened. Another Hudson with mixture half honey, well boiled, was ready to run any time all winter. Ford cars with larger tubes developed no trouble at all.

I had one party melt brood combs which contained pollen and honey, and when melted poured the mixture in on top of the cold water in the radiator. At 18 degrees below zero the next day the radiator froze up and had to be repaired.

Since then a properly mixed solution was placed in the same car and there was no more trouble, but the owner had to melt out the wax and pollen first before he could get the proper mixture.

The experience of users around here indicate that it is desirable to use a solution, half honey and half water, and to make a thorough mixture by a little boiling previous to placing in the radiator, so that there will be no trouble.

THE METAL COMBS

By Frank C. Pellett

THE aluminum honeycombs have been in use long enough now that their defects should be apparent and their advantages likewise manifest. The American Bee Journal has been somewhat uncertain in its attitude toward this new invention. If it is good we want to give it every proper encouragement. If it is not good we want to give our readers the facts. Like every important invention that is new, the metal comb has had its ardent champions who swear that it is the final perfection in comb construction, and its bitter opponents who can see nothing good about it. Until we are fully convinced one way or the other it has seemed the wise policy to recommend to our readers that they try the comb for themselves and reserve our opinions until there has been time to demonstrate the real merits of the contrivance.

Reports of the beekeepers have been somewhat conflicting. From some localities the beemen seem enthusiastic and have much praise for them, while from other quarters come reports of opposite character. In order to get as much information as possible, the writer recently spent some time in examining bees on metal combs in Texas, where they are apparently in most favor. It is my intention to give the facts as they appeared to me and to explain the arguments in favor of the combs as well as those against them. At this point I must confess that I had become somewhat prejudiced against the metal combs and that after seeing hundreds of them in use that had been in the hives two or more seasons I look upon them much more favorably than before. In fact I have ordered a few sent to my farm on trial to see whether the faults which have been charged to them may not, after all, lie with the beekeeper.

To get at the truth of a matter it is always necessary to hear both sides. I heard first the objections and then went to headquarters to hear the other side. The metal combs are manufactured by the Aluminum Honeycomb Co., of Texas, with factory at San Antonio. Miss Alma Hasslbauer, Secretary of the company, is a good sport and said that she was willing to assume that I was from Missouri and must be shown. She likewise said that she would be quite content to have me see the combs in use and then tell the beekeepers only what I could see for myself. She gave me permission to discount as far as I liked all the things I heard about the combs. Accordingly I gathered up all the objections which I had ever heard and fired them back one after another.

USE AS BROOD COMBS

My observation of the combs when used for brood-rearing had not been reassuring and I described the patchy appearance of the brood I had seen on the metal combs. I also objected that the queens would not lay in the metal combs if there were wax combs within reach. Out to the apiary we went to see just how the queens were behaving in the Sunny South Apiaries. The metal combs in these apiaries are used interchangeably. Nearly every hive has part wax combs and part metal combs, so we had a good chance to see. In one apiary a number of young queens had recently been introduced and were just beginning to lay. Several had laid in only one comb. The first hive we opened, we found the young queen laying in a metal comb which was nearly filled with eggs, while next to it was a wax comb on which the bees were busy polishing the cells in preparation for her. That was something of a surprise, since at Hamilton we had put one colony on a set of metal combs with only one wax comb in the hive and that in the middle of the brood-nest. In that hive the queen had remained on the one wax comb for so long that it seemed impossible to build up the colony. LeStourgeon explained this by saying that we must have given them new metal combs. I had to admit that this was the case. He then stated that they always use the metal combs as extracting combs for a time before using them for brood-combs. He then showed me a colony where new combs had been placed in the brood-nest and in that one we found just such patchy brood as I had expected to find in the metal combs.

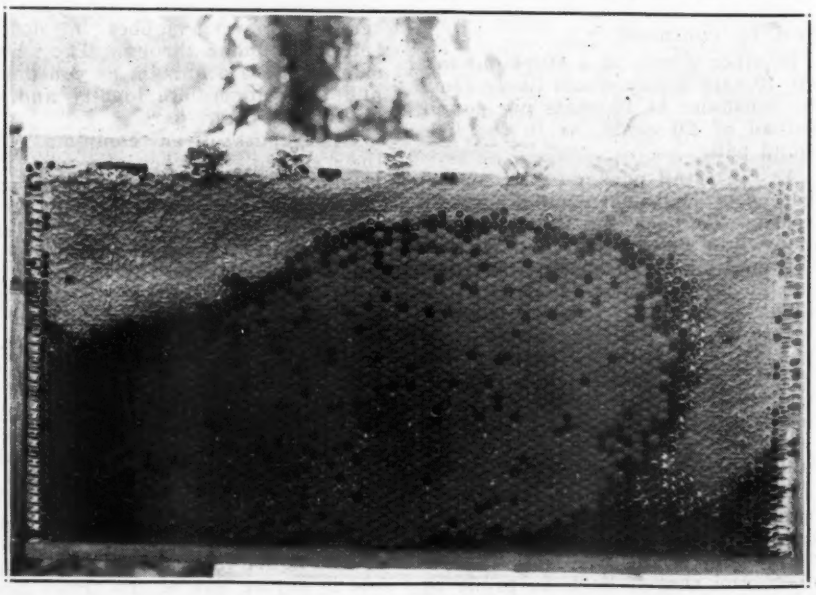
We examined a considerable number of colonies in several apiaries, including those at the State Experimental Laboratory and found very nice combs of evenly capped brood, as shown in the picture. Later I talked to a number of Texas beekeepers who had used the combs in considerable numbers. T. W. Burleson, of Waxahatchie, who is one among the largest beekeepers in the state, stated that he had about 1,000 of these combs in his yards and that after a season or two of use as extracting combs the queens take to them as readily as to the wax combs, as far as he could see. He admitted, however, that they were inclined to prefer the wax combs in winter. I found other beekeepers who were also enthusiastic about them and some went so far as to say that they expected to put all their colonies on the metal combs.

The question concerning the building of queen cells was then raised and I was shown some very nice queen cells built on the face of a metal comb. A picture of these cells is shown herewith. When I asked how they would provide for the rearing of drones the most ardent champion of the metal comb had to admit that it would be necessary to provide some wax combs in which to rear drones, since all the cells in the metal combs are of worker size. While it is desirable to limit the number of drones to a small percentage of the brood reared, it would be hard to continue in the beekeeping game after they were eliminated altogether.

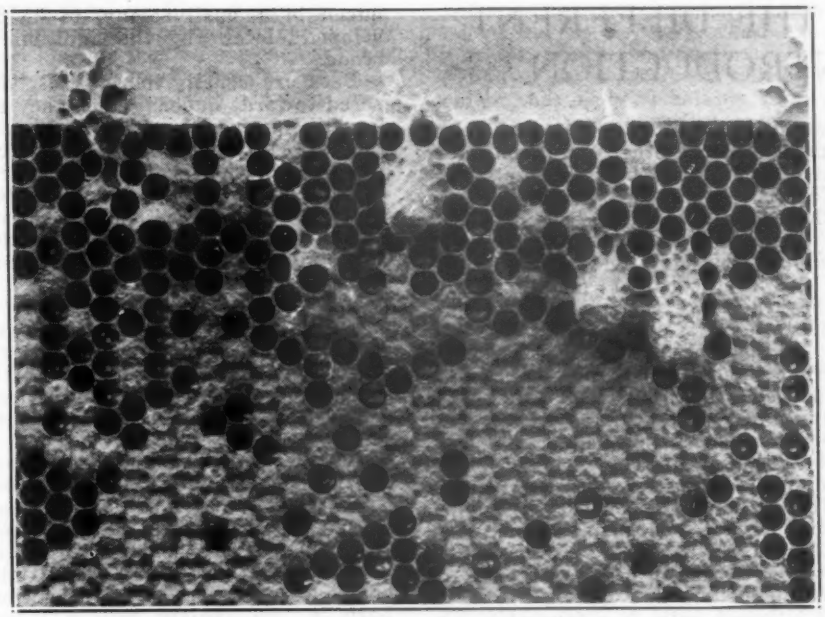
It is only fair to say that not all the beekeepers consulted favored the metal comb as a brood comb. Most of the boosts for metal combs come from mild climates and conditions in Texas should certainly favor them as far as winter temperatures are concerned. I will touch on this point again a little farther on.

As Extracting Combs

The objections that I was able to offer against the metal combs for storage purposes were easily overcome. The difficulty in uncapping has largely been removed by making the cells shallower than was formerly done. This permits the bees to add



A well filled area of brood in an aluminum comb.



Queen cells on the face of metal combs.

sufficient wax in drawing out the combs to leave ample room to operate the uncapping knife easily. Where a comb is pressed close to the outside of the hive they sometimes cap even with the metal and in that case the comb is difficult to handle. This need not happen if proper space is allowed.

There is much advantage in having a reserve supply of extracting combs which are not readily destroyed by moths and which are instantly available in case of need. There are few apiaries in which honey is not occasionally lost for lack of storage room. That the bees will readily store honey in metal extracting combs there can be no question. The picture tells this story nicely, for the combs shown will compare favorably with the best wax comb for this purpose.

It is true, of course, that the wax-moths, when spinning their cocoons, often seriously injure frames in wax combs. They can do the same with the metal combs, even though they are unable to destroy the metal. There is nothing yet in sight which will entirely relieve the beekeeper of responsibility for his outfit.

The walls of the metal cells are very thin and easily damaged and once damaged are not easily repaired. In fact, they are so thin that they are readily injured by mice. However, no good beekeeper will permit the mice to have access to his combs, either on the hives or in the honey house.

On the whole, most of the beekeepers consulted seemed to feel that the metal comb is a success as an extracting comb. My last objection urged against them for this purpose was the price. LeStourgeon came back at me with the cost of drawing a wax comb and cited the amount of honey which the bees must consume in order to build such a comb. My only argument was that I had to pay cash in advance for the metal comb, but that if I supplied the bees with a full sheet of foundation they would get our honey to build the comb and even though it might cost me more to let them do it, that I had not first seen the money. Seriously, however, the metal comb seems to deserve a place as an extracting comb and to be worthy of a trial for this purpose.

The Wintering Question

The principal argument offered against the metal combs in the North has been that the bees will not winter well on them. After what I have seen, I am convinced that we do not yet know whether they will or not, for most of the trials have been made by placing the bees directly on the new combs. If the combs are used for one season as extracting combs and then given to the bees for brood combs after the honey has been extracted, they may do better. Personally I am still very doubtful as to whether it will be wise for the northern beekeeper to use them for brood combs, for he cannot use a different brood comb for summer than for winter. On this point the Texas folks could only guess, for they have had no experience with bees on metal combs in northern winters. Many of them had to confess that they had never seen either snow (in quantity) or ice thick enough to hold a cat.

The purpose of this article is to bring out the facts and not to make a case either for or against the metal combs. If any of the readers of this Journal have given them a fair test by wintering bees on them in the North I would like to know the result.

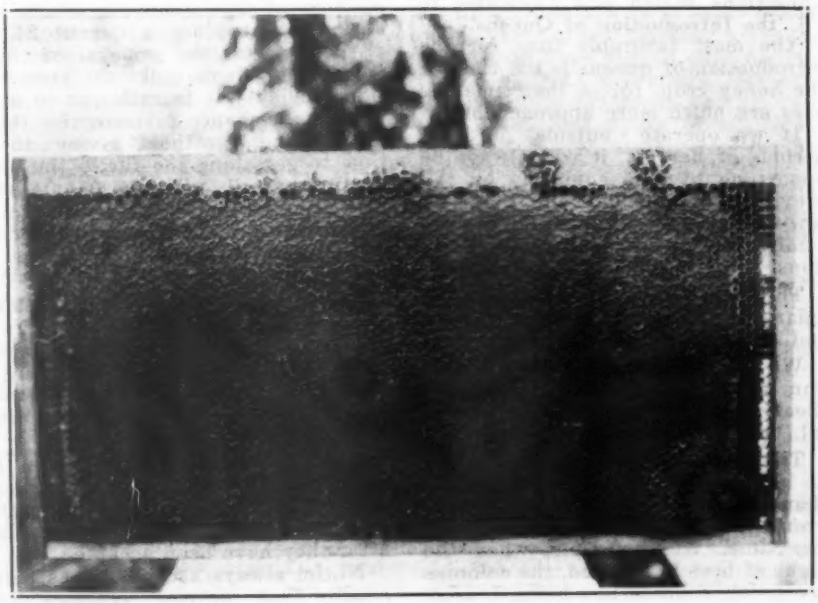
ADVERTISE

In the August issue of the American Bee Journal, Mr. Pellett tells about the use of raisins in bread and asks for suggestions that will help to create a demand for honey like raisin bread did for raisins. Our local baker uses honey in the bread he makes. A sixty-pound can lasts him about two weeks. If every baker in the United States used this amount of honey, would there be enough honey for other purposes?

It would be interesting to know how much the raisin men had to pay to create the present demand for raisins and how much they are spending to keep up that demand. If the beekeepers would spend the same amount, I feel sure a big demand could be created for honey.

New uses for honey will not create a big demand for honey without advertising. Let all the beekeepers get together and push the old and new ways to use honey and there will soon be a shortage of honey. From eight to ten per cent of the selling price of many good products is used for advertising. When will beekeepers do that?

E. A. Meineke.



A well filled metal extracting comb showing that the bees will store honey readily in the metal combs.

UNCERTAINTY OF THE DIFFERENT METHODS OF INTRODUCTION

FROM L'APICULTURE INTENSIVE
By Perret-Maisonneuve.

The success of queen introduction depends upon a considerable number of circumstances, the absence of any one of which complicates the possible result. Most of these circumstances are known to us, but there are some impalpable and some unknown ones, which complicate the question.

Success in introduction depends upon the date of the operation, the hour, the temperature, atmospheric conditions, date of queenlessness, greater or less amount of crop or dearth, position of the brood in the hive and location of the spot where the queen is released, the presence or absence of eggs in the hive, the condition and temper of the queen, her race, her age (if she is a virgin), and the more or less peaceable moods of the bees.

From this it follows that a colony which is yielding today may not be so tomorrow; that two colonies, in appearance identical, have different tendencies towards the accepting of a queen; that a method of introduction which works well in one location may fail in another or at another date. We must state also that the very best methods may end in failure in the inexperienced or unskilled hands of a beekeeper who may irritate the bees, or allow of robbing by neglecting elementary precautions, or by opening unnecessarily and prematurely the hive in which the queen was introduced, for it is always wise to allow the queen to begin her laying before disturbing the hive.

Before describing different methods of introduction which may prove satisfactory, we think it wise to indicate the conditions which are favorable or unfavorable for safe introduction.

Conditions Which Are Favorable to the Introduction of Queens.

The most favorable time for the introduction of queens is the time of the honey crop, for at that time the bees are much more approachable.

If we operate outside of the periods of harvest, it will always be opportune to feed copiously on the previous day, the day and the morrow of introduction, in order to artificially reproduce analogous conditions.

The months during which the apiary is the quietest, usually June and August, are equally favorable.

We do not advise queen introduction after September 15, as the checking of the laying, always useful, becomes uncertain.

The **hour** for introduction is not to be overlooked as a factor: the chances of success are greater in the evening, at nightfall, than in the day time. At that time, when the flight of bees has ceased, the colonies are quiet, robbers not being feared, the watch at entrances is less rigid, and an atmosphere of quietude prevails of which we must take advantage. On the other hand, the queen is not perturbed by light, and therefore is less disposed to run about on the combs.

A medium temperature, absence of wind, and especially of storm indications, are excellent conditions, for they facilitate the quietude of colonies.

The logical conclusion to be drawn from the above considerations, to succeed in introductions, is to avoid anything which would irritate the bees, rudeness in opening the hive, the dropping of frames, hot smoke—in fact any possible mismanagement. This recommendation is to be applied not only to the moment of queen liberation, but to the 72 hours which follow, so as to avoid all risks of balling of the new queen.

Although **calm** is a favorable condition, on the other hand complete confusion of the colony is, in spite of its apparent absurdity, favorable to safe introduction.

Frightened bees know neither friend nor stranger; they do not react, they accept or rather bear anything, and a strange queen, arriving among them in such circumstances, will be unnoticed. This condition of demoralization is obtained in several ways: by smoking the colony, after carefully closing the hive, with cold, white smoke, or by drumming, which incites the bees to fill themselves with honey and renders them doubly harmless; by sprinkling them with flour and also by the confinement of the colony during a few hours, after rendering it queenless, in a cool and dark place. Most of the methods of direct and immediate introduction are based upon the above considerations.

Among favorable conditions we must mention also the recent queenlessness of the colony in which we desire to introduce a queen: 24 to 48 hours after the removal of their own queen seems to be the most rational delay. It is sufficient to give the bees a chance to recognize their queenlessness, without giving them time to get along too far in the production of cells of replacement. After that time, indeed, they might prefer a queen of their own rearing to the one which we would attempt to impose upon them.

The deprivation of unsealed young brood has a tendency to render a queenless colony more accessible to the introduction of virgin queens; in fact, the entire absence of eggs is the primordial condition for their acceptance.

On the contrary, the absence of eggs in the hive is an excellent condition for the introduction of fertile queens, and it incites them to lay after they have been accepted.

Nuclei always accept queens more readily than normal colonies, and this fact may prove a useful expedient for the introduction of a valuable queen in a small colony, to be developed later by the addition of brood.

Bees are usually more kindly disposed towards queens which they release themselves than towards queens that are presented to them, unless this presentation is made in particular conditions, to be mentioned later.

Introduced queens must be released upon combs of brood, for this is the place where bees expect to see them.

Young bees, freshly emerged from the cell, accept any queen given them, without exception; so if we release an introduced queen on hatching brood or among very young bees, we have the greatest possible chances of success.

Certain conditions of safe introduction are innate in the queen herself. Thus a queen of calm temper, of sedate bearing, will be much better received than one of excessive nervousness that runs about the combs. For that reason, the queens born in the apiary have a better chance than strangers.

Lastly, queens removed from a comb upon which they have just been laying, and introduced without delay, will always be more readily accepted than those whose laying has been suspended by long caging, and the former's arrival often causes the destruction of royal cells and perhaps of a virgin already hatched in the hive.

Conditions Which Are Unfavorable to Queen Introduction.

The most unfavorable time for the safe introduction of queens is that of honey dearth; the lack of stores is, similarly, an unfavorable condition, and it is necessary, when it happens, to remedy it by supplying the colony with one or more combs of honey and plentiful feeding.

Unfavorable weather, cold, extreme heat, stormy weather, especially, are adverse conditions. Bees are sensitive beings, and on certain days they are, we might say, hysterical without very definite reason. When they manifest a certain amount of nervousness, it is well to delay operations rather than run the risk of a failure.

When a colony has been queenless for four or five days, it appears to count upon its own queen cells, and while expecting the hatching of those queens, it is ill disposed towards a stranger, especially if the latter, fatigued by a long trip, is not ready to immediately resume her interrupted laying. So, before giving a valuable queen to a colony that has been queenless for four or five days, it is advisable to carefully inspect all its combs, to their farthest corners, and remove all the queen cells it may contain.

It is necessary to point out, moreover, that in case the introduction of a queen should succeed, in spite of the presence of royal cells, one would run the risk of seeing this colony swarm out a few days later, or to see the queen replaced by a young rival. Following an accident of this kind, the purchaser, not seeing any bees hatching of the pur-

chased race, might complain of the breeder, instead of putting the blame upon his own lack of experience. The same thing may happen when a queen is introduced in a colony containing a virgin.

The longer colonies are left queenless before introduction, the less apt they are to accept queens; they may contain virgins or drone-laying workers which constitute real obstacles to queen introduction and they daily diminish in the number of young worker bees; a queen is always rejected by a colony which contains only drone brood.

The old bees are the ones which are the most surly towards strange queens and which cause the failure of the most methodical introductions. It is, however, possible to get rid of them temporarily and to take advantage of their absence to cause a queen to be accepted. This would be particularly interesting when such a queen is of value.

This elimination of the field bees may be done in the following fashion, recommended by Dr. Miller: After having set aside the colony which insists upon rejecting a fertile queen, we put in its place a hive containing empty combs and only one comb of sealed brood. Above this hive we place the queenless colony, with its bottom-board, for it must not communicate with the lower hive.

The field bees will fly out of the upper hive and, returning from the field, will enter the lower hive, so that the unmanageable colony will soon contain only young bees and will be in the best possible condition to accept a queen. She will be introduced into it by the cage method, and as soon as she begins to lay, in the evening, we will remove the lower colony and put the other on its stand.

After removal of the colony containing the old bees, we will smoke it and place it gently on the side of the other. Opening the hive containing the new queen, we will remove its cover, place a newspaper over its frames, and lift the hive containing the old bees to the top of the latter, arranging it so that its entrance be completely closed. If the temperature is high, we may prevent their being smothered by placing a screen over the combs. The old bees thus imprisoned will cut holes in the paper separating them from the lower hive, and coming into it one at a time, will cause no trouble and will respect the queen.

The Miller process just mentioned is also one of the most practical for the doubling up of colonies.

Weak populations are less apt to accept queens than strong ones, because they do not occupy all the combs and the new queen runs some risks when she ventures into unoccupied corners. In order to remedy this difficulty, it is well to shrink the space occupied by the bees with the help of a division board, in the colonies in which queens are to be introduced, and to avoid setting a queen at liberty on a comb not containing brood.

Colonies that are invaded by robber-bees are in the very worst condition for queen introduction.

When a queen has been killed by accident, her body remaining in the hive sometimes constitutes an insuperable obstacle to the introduction of a new queen.

The presence of eggs in a hive, we will repeat, is essentially unfavorable to the introduction of a virgin queen, and the insertion of a comb containing such eggs is sometimes the cause of the bees killing such a queen; but it is a good thing to insert a comb supplied with fresh laid eggs in a queenless colony deprived of brood, previous to the introduction of a fertile queen, especially if the colony is suspected of having a virgin queen.

Some unfavorable conditions are dependent upon the queens themselves. Thus, virgin queens over three days old; queens that have become fatigued by a long trip; those whose captivity has interrupted the laying; those which have acquired an unpleasant odor by their transportation or in any other way; those which are too lively, are unwelcome to the bees.

SWEET CLOVER IN WILL COUNTY, ILLINOIS

By George Watt.

One has only to visit this county and feast his eyes on the large acreage of this so-called "noxious weed" and then visit some of the many apiaries, with supers tiered up five and six high and hear the hum of the bees everywhere, to become, then and there, a sweet clover bug.

It was my pleasure, lately, to visit Will County, and to meet that prince of good fellows and Hubam booster, Edward A. Winkler. Through his hospitality, I visited many of the farmers that are growing Hubam and heard their praise of that legume as a soil builder and of their profits from the sale of seed.

I saw field after field of corn growing rank and tall where sweet clover had been plowed under the fall before, and, on the other side of the road, corn that was spindling and fired. I saw fat cattle in sweet clover, knee high, while there was only one cow to the acre on the other side of the road and only one cow to two acres of bluegrass pasture, and that pasture as bare as the road.

And that is not all. I saw (speak softly) Ed. Winkler's bees with supers piled five and six high, and he had extracted twice. This was about August 1.

The old saying that distant fields look greenest applies especially to beekeepers. We are always looking for a land flowing with milk and honey—a land of promise. But, friend beekeeper, don't look for that paradise in a land of blizzards and gales, and do not look in Will County for the pot of gold at the end of the rainbow. The other end is in your own vicinity.

Talk sweet clover to the farmers. Get them to sowing it and the bees will keep you busy piling on supers and taking off honey. Also, the farmer will be your life-long friend. There may not be a second Ed. Winkler in your county, or your vicinity may not become a second North Dakota, but you can improve your locality and make it an honest-to-goodness bee country.

POISONING THE BEES

By Mrs. M. C. Flint.

People who keep bees, whether one or many hives, may be interested to know of the injury done by the State Board of Horticulture in Oregon to the bee industry in the city of Portland.

That city is infested with the European earwig, an insect that, according to Bulletin No. 566 of the United States Department of Agriculture, eats other small insects, dead flies, and the dead and dying of its own species. The young earwig also feeds on the shoots of dahlias, clover and some other plants, but they have never, so far as is known, been destructive to general garden plants.

Now the people in Portland become somewhat excited on seeing such increasing numbers of the earwig about their houses and gardens. and they appealed to the State Board of Horticulture to eradicate, if possible, what they considered a pest.

The State Board responded by using a mixture composed of sodium fluoride, 12 ounces; molasses, 2 quarts; wheat bran, 12 pounds, water, 6 quarts. This quantity of the mass they spread on each lot, over the lawns and gardens. Now the bees were attracted to the molasses in the mixture and were poisoned by the hundreds of thousands. One man, who has several stands of bees, says that he never in his life saw such a sight as he beheld in his yard on the morning after the poison had been spread over his lots on the night previously. He says that on every square inch of his yard were dead and dying bees. Great bunches of bees as large as his fist lay writhing in agony on the ground. He estimates his loss at three hundred thousand bees. Other beekeepers in the neighboring districts suffered a like or a greater loss.

And, after all this damage to bees and gardens, the earwig is still a visitor in Portland, and is likely to remain for the next two thousand years or more.

A British Correspondent

We have a letter from a boy of 15 who lives across the sea. He would like to correspond with a boy of his own age who reads the American Bee Journal. Any boy interested should write to Maxwell Stuart Yeoman, The Plas, Glyn Ceiriog, North Wales, England.

GIVING AWAY HONEY

By Hy W. Sanders

Prior to the war, the United States used to export large amounts of honey to Europe, along with the vast quantities of wheat, meat, cotton and other food and raw materials. Since the calamities in Europe have so disturbed the normal economic life of the nations, they have found it necessary to curtail their buying to the utmost limits. It is true that they have still been obliged by sheer necessity to buy wheat and cotton, but even here the price changes during the past three years have shown a terrific decline from inflated periods.

In the less necessary articles there has been a greater decline, as the present state of the cattle industry will testify, while the articles which appear to be in the nature of luxuries, such as honey, have suffered worst of all. It therefore has come about that beekeepers have witnessed a prolonged stagnation in the honey markets, and we have seen prices drop lower and lower and the market reports filled with monotonous repetitions of the lack of demand amongst buyers. Just now, it is true, the high price of sugar has given honey prices a better tone, but there will be no real relief until we get the people of this country to cultivate a taste for honey that will absorb all our supplies and make us free of any outside markets. The hope that Europe would return to "normal" (by which term is usually implied the conditions that existed before the war) seems to grow more distant and the remedy for the present situation is a vigorous campaign to increase consumption at home.

Just how can this be done?

In "Big Business" it is probable that an advertising campaign, costing large sums of money would be proposed, with other special selling efforts, but in the case of an unorganized multitude such as the beekeepers, scattered throughout the country, and facing so many local problems, it seems out of the question at present. Each must face the problem in his own way. Hence the suggestion is made that we stimulate honey sales by giving away honey.

There is nothing that makes people buy honey like tasting it, and there are millions of homes where honey is not bought regularly, where it would be if they could be induced to make a start.

The samples should not be too small. Three-quarter pound or even pound bottles, just as good as the best we have, labeled like others, and given around to the neighbors in our immediate vicinity, will bring in orders faster than anything I know. When all the trade at our doors is corralled, then go farther afield. Select a village or a district and take a few dozen samples. Call and give them to the ladies with your compliments, asking them only to please try the honey and see if they like it. Then a week later you can go and get orders from 80 per cent of them and get quite a large proportion of those buyers for permanent customers.

Somebody will arise at this point to complain about the cost of such operations. The reply to such a complaint is that it costs nothing.

The trade that arises from this kind of propaganda will always pay a little above the market for their honey, and this little extra more than pays for the samples. Those beekeepers who sell their honey wholesale for half or less what it will fetch at retail have in the scheme here suggested a method of making far more than ever it would cost them. To use a Scriptural analogy, it is casting one's bread upon the waters that it may return after many days.

A live beekeeper soon becomes known in his neighborhood. There is an extraordinary interest in bees and their ways among all sorts of people. If the bees are gentle, so that visitors can be shown the "innards" of the hives, the place in the summer will be the port of call for hundreds. Make it a practice to give everyone a pot of honey to take home, and watch the business grow.

There is another kind of giving of honey that does not bring a monetary return but which must be numbered among the things that make beekeeping worth while. That is the keeping for one's special friends of special samples of extra good honey. There is always a time when the honey is a little better than the best, and that is the time when we remember our best friends and sometimes, too, some folks who are not well enough off to get all they want. These get some of the best honey and they do not pay for it either, which again is one of the things that make beekeeping (and life) worth while.

California.

ANTS IN THE APIARY

So many beekeepers have asked me how to get rid of ants in the hives or in the apiary that we have concluded to make a study of the different methods given.

Ants in the Hive

They do not usually bother the bees, but make their nest, especially in wet weather, on top of the brood chamber, where they are out of reach of the bees and yet get the benefit of the warmth of the cluster, often in an upper apartment which is separated from the cluster by a board or a cloth. There they may lay their eggs in large numbers. It is very inconvenient for the beekeeper when he examines his bees to find many ants nested above some of the colonies.

Many writers on bees mention ants as a pest of the apiary, but few take the pains of suggesting remedies.

One of the old writers, quaint Butler (1634), does not mention ants in particular, but suggests that, in order to keep crawling insects, such as spiders, from the vicinity of the hives, it is well to use "ashes strewed on the outside of the hives."

Huish, that fault finder who criticized the great Huber, writes in his book that, to keep ants from climbing to the top of the hives, he fastens pieces of sheepskin, "with the wool on," around the feet of the hives. He also recommends to put either garlick or shallot on the top of the hives, as ants dislike the odor of these vegetables.

Simon (1758) recommends chalk, ashes, or powdered lime, spread upon spots where ants congregate. Dzierzon also recommends ashes to be spread, not only about the hives, but also between any double walls where ants might make their nests.

Della Rocco made a mortar of soot and urine which he used to plaster the bases of the hives, to prevent the ants from climbing on them.

Bertrand, Cowan, Digges and others recommend napthalene, to be used whenever it will not inconvenience the bees. This drug is best known in this country under the name of "moth-balls."

Hamet recommends powdered sulphur to be spread wherever the ants congregate in a dry spot about the hive.

A. J. Cook recommends fly poison, to be used wherever the opening is small enough to admit only ants and not bees.

Cowan, in addition to napthalene, recommends also leaves of tansy or of black walnut, which are disliked by ants.

Our own recommendations, in the "Hive and Honeybee," are of salt, tarred paper, ashes, sulphur; either of these things placed on top of the brood chamber, where ants congregate, will soon disgust them so as to cause them to leave.

Ants in the Apiary Grounds.

To destroy ants' nests whenever we find them in the open, the A-B-C recommends to make one or more holes in the nest with a crowbar or a hardwood stick, pour bi-sulphide of carbon, kerosene, or gasoline, in the holes and cover with earth. Hamet, Huish and Poppleton used boiling water poured in the ants' nest.

When the nest was not to be found, Beaunier (1806) advised placing about the apiary shallow jars or bottles filled with honey water and covered with caps of paper or pasteboard pierced with holes large enough only for the ants, so the bees could not be caught in the same traps.

Surely, some of these remedies ought to be available to those of our readers who are troubled with ants, in the hives, in the apiary or about the house.

C. P. D.

A French Bee Book

We have received a half dozen copies of Periet-Maisonneuve's "Apiculture Intensive Et Elevage des Reines," in French, which we can supply at $1.50 per copy, prepaid.

THE EDITOR'S ANSWERS

When stamp is enclosed, the editor will answer questions by mail. Since we have far more questions than we can print in the space available, several months sometimes elapse before answers appear.

EMPTY COMBS—MOTHS.

Please advise just what to do with empty combs after extracting, so that moths will not ruin them. NEW YORK.

Answer.—We usually return them to the hive until the cooler weather comes, then place them in a cold room where the thermometer goes down below freezing in winter. If there is any likelihood of moths in them, burn some sulphur in an iron vessel in the room in which they are to be kept. Druggists sell brimstone preparations for this purpose. You may also use bisulphide of carbon, spread upon a rag and enclosed tightly within the supers or boxes containing the combs, one-eighth ounce per cubic foot. This preparation is explosive and no light should be used when preparing it. If you burn brimstone, you must make sure that the combs are fully exposed to the deadly fumes. If you believe there are moth eggs likely to hatch, renew the fumigation ten days later. Combs kept in a cold room will be completely free from moths at the end of winter.

OUTDOOR FEEDING

I have near 50 colonies of bees and I wish to ask you if it would be all right for me to take the supers that are not well filled (I mean the last ones left on the hive after honey gathering is over for the season) off the hives and feed the partially filled sections to the bees. They will deposit same in the hives for winter use. But will the feeding outside be liable to do more damage than good? Would it cause them to do robbing from the weaker colonies? And if so, what would be a good way to prevent it. I have put feed in the supers and left them on top the hive, but I want the supers so I can put a pad of leaves in them this winter. I thought of taking off all supers and feeding the bees what honey there might be that was not saleable; feed it outside during the month of October. Then I can put them away for the winter and feel that they are not going to starve this winter. To feed them what extra honey I will have in addition to what they have already on hand ought to keep them all right.
NEBRASKA.

Answer.—We have never considered outside feeding a very good thing, although it has been done. Our reasons for disliking it are as follows:

1. This easy way of getting food excites the bees. Honey is more attractive than sugar syrup, on account of the stronger odor, and the feeding of it increases robbing. If it is done, the weak colonies must be carefully watched so the strong ones will not overpower them.

2. When we feed outside, it is impossible to prevent the strongest colonies from getting the lion's share. When we feed inside, we see to it that the needy colonies get the greater amount.

3. When we feed outside, there is great excitement and great noise. This attracts the bees of the vicinity and if there are bees in the trees or in rocks, houses, chimneys, etc., or if we have neighbors who own bees, we are as likely to feed those bees as our own, though we may not wish to do so.

Outside of these objections, there is no difficulty in getting bees to carry in honey exposed outside. Personally, I prefer feeding by adding an upper story temporarily. I would uncap all sealed honey before giving it in a super to be taken down.

SELLING COMB HONEY—TALL SECTIONS

1. I would like to ask your opinion of the best, fairest and most satisfactory method of selling comb honey; whether by the actual weight, or by the grade, or by the section.

Practically all the comb honey in this locality is sold by the section, regardless of grade and weight. Personally, I had about decided to sell, this year, by grade, as I think it is fairer and more satisfactory, both to the producer and the consumer. The grades I had selected were: Fancy, No. 1 and No. 2. About how much difference should there be in these grades?

2. I have used a number of 4x5 sections in combination with a shallow extracting frame on each side of the super this year. I am very well pleased with the result, and the tall section looks very nice. Do you think this section is standard, and will it stand the test of time? MICHIGAN.

Answers.—1. The method of selling your comb honey must depend upon the trade you can reach. If you can sell all your honey within a small radius, you will succeed best with the method which has so far given you th best results, and you are a better judge of that than anyone else. But if you have to sell away from home, and especially outside of the state, it will be necessary for you to adopt the methods in use by large producers and dealers, and grade the honey not only as to quality and color but also as to finish and weight. By most of the state rules, the sections must be marked a minimum weight, so that the customer may know about what weight he is buying.

2. The 4x5 section is a very nice section, but I doubt that it will ever become a standard. The 4x4¼ section is the standard all over the world. For that, again, your personal trade may direct you as to what is best for you to do.

Our June number gives a very good appreciation of grades of comb honey, by one of the best judges, Mr. Rauchfuss, of Denver.

INTRODUCING QUEENS.

1. I read of the Miller smoke method of introducing queens, where it says that the colony spirit must be entirely broken to insure success. Would it not be possible to introduce them at extracting time, for I cannot imagine a time when the colony spirit is more completely broken than after being brushed and smoked?

2. I would like very much to requeen this fall, but I have not the time to go through them and remove the old queens. I was wondering if you had any information on that subject. I have not been able to find anything published later than 1917, and nothing on that point.

3. If I introduced at next to the last extraction, which would it be best to use, virgins or laying queens?

4. If laying queens were used would it lessen chances of success to clip their wings? IDAHO.

Answers.—1. Extracting time would be a good time to introduce queens, if we had time to hunt the old queens while doing the extracting, and if there still was a honey crop going. But we usually cannot spare the time to hunt queens while we extract, and besides, the job is usually done at the end of the honey crop, when there are plenty of robbers ready to enter the hive. In the latter case, the queen would run the risk of being mistaken for a robber. I have but little faith in the smoke method, anyhow.

2. It does not take very long to remove the old queen, if we have straight combs in the frames, so they may be handled quickly. Lift the combs one after another and look them over. Usually the queen is on the brood combs, unless she has been frightened away by too much smoke. When you lift a comb, put it into an empty hive till after you find the queen. In that way you will have room to see. Often we see a queen run down on the comb that has just been uncovered by the removal of another comb. If you cannot find the queen readily, by lifting the combs, and looking for her on them, just shake all the bees into an empty hive and set that on top of an excluder, above the old hive after having returned the combs to it. The bees will go down through the excluder and leave the queen and a few bees in the excluder. Sometimes you may get the queen by pounding, a few strokes on top of the hive, and opening it right away. The queen may come to the top with some of the bees. But that is not often successful.

3. You will never succeed with virgins as well as with mated queens. A queen in good laying trim is the easiest to introduce. The most usual and probably most successful method is to insert her, in the cage in which you received her, right in the center of the brood combs, releasing her after two days and leaving the hive without opening it for 3 or 4 days after that.

4. I do not think clipping a queen lessens the chances of successful introduction.

DEMAREE METHOD

What is the Demaree method?

Answer.—The Demaree method, which was given at length in the American Bee Journal, April 21, 1892, and was again given and commented upon, page 204 of the May number of 1922, is as follows:

Transfer the combs containing brood from the brood chamber, to an upper story above the queen-excluder. One comb, containing some unsealed brood and eggs is left in the old brood-chamber with the queen. Fill out the brood-chamber with empty combs or comb foundation.

Some leading apiarists place one or two stories of supers with combs for extracting between the upper story of brood and the lower story of bees and queen. Of course, this depends upon the strength of the colony on which we operate. If done properly, the Demaree system prevents swarming entirely.

DRONES, REQUEENING, ETC.

1.—Should enamel cloth be kept over top of frames at all seasons?

2. Where drone cells occupy considerable space in brood frames, should the whole frame be removed? If the drone cell parts were cut out would the bees build more drone cells?

3. Should I requeen every colony that has not cast a swarm this year or last? When should I requeen?

4. Where two standard hive bodies are in use as breeding room, should both be left, or should one be removed? If removed, when and how dispose of its contents?

5. Where there is much drone brood should a queen excluder be used below it?

6. I have two apparently strong colonies located rather far back in a pretty dense shade. These two seem to be very poor workers and have made but little honey. What is wrong?

7. I notice that where a second hive body was added above for additional building room the bottom of upper set of frames were nearly always filled with drone brood. Is this the case generally, or is something wrong?

8. Where two hive bodies are in use and both pretty well filled with honey, brood and bees, could I remove the original hive body with its contents and queen to a new location, using the slanting board and supply the second hive body now on the stand with a laying queen and in this way get 2 strong colonies before winter, or is it too late?

TENNESSEE.

Answers.—1. We keep it over the frames or supers during the entire summer, removing it only for winter, when we use absorbents, mats, cushions or other warm, absorbing material.

2. The bees will almost invariably rebuild drone cells where drone cells were cut out, for the same reason that they built them in the first place. They naturally want from one-seventh to one-tenth of drone comb, in the same way that nature produces as many bull calves as heifers. When we cut out drone combs, we sometimes rebuild one full frame of worker comb out of several of partly drone cells. That is a matter of careful and economical work which some people understand and enjoy better than others.

3. We do not judge of the value of a queen by the casting or non-casting of a swarm. If the colony has yielded a good crop of honey and the queen is less than 2 years old, we would not change her. If you requeen, do it, if possible, before the end of the crop.

4. Usually one is removed, leaving the hive with plenty of honey, 40 pounds, and as much brood as possible. The remainder, if brood or honew, may be used to help weak colonies. If there are no weak colonies, then it would be better to leave the two stories on. Some people winter in two stories and succeed.

5. We do not use queen excluders at all; would rather cut out the drone brood and feed it to the chickens. But if they are desirable drones, for mating, I would leave it on.

6. I do not believe that those two colonies in dense shade are poor workers because of the shade. We tested that to our entire satisfaction, years ago. Probably their queens are inferior, or their combs have too many drone cells.

7. There should not be any drone comb in that upper story. We notice that our queens usually seek for drone cells after filling a whole hive body. We believe it rests them to lay drone eggs, after active laying of worker eggs, as the spermatheca muscles do not act in drone egg laying.

8. Yes, you can do that if you see to it that both bodies have brood, and you make sure of having the smaller amount of brood and young bees on the old stand, since that hive will get all the field workers. But, as to whether it is too late for you to do this, I cannot say. I don't know. It is for you to ascertain whether there is much of a prospect of a crop yet, and also whether those two colonies will have enough bees and stores.

FOULBROOD

I thought my bees were free of foulbrood, but I have discovered it again in one or two colonies. What is the best thing to do this late in the season?

PENNSYLVANIA.

Answer.—Better put those bees in winter quarters and take good care of them until next spring. Then transfer them, at the opening of fruit bloom, to new hives and new combs or comb foundation. Be sure that they are sufficiently strong to defend themselves in the meanwhile, for it would not do to have them robbed. If they are weak, it may be better to destroy them now.

FEEDING BACK HONEY

I have about 1,000 pounde of honey on hand which was fermenting, but I took the advice given a correspondent in the "Questions and Answers" columns of your paper and heated nearly all the honey to 155 or 160 degrees.

1. The honey looked all right and was removed to keep it from getting bitterweed in it. The bitterweed and fall flow seem failures, so I want to feed that honey to the bees for winter. There are about 50 colonies, about 8 of them weak. In this locality there is hardly ever a week in winter that bees cannot fly. Would it do to put the honey in tubs out in the yard with corn cobs and chips floating in the honey, say 50 lbs. daily? I do not want to buy feeders, and would like to feed in the open if it is practicable to do so. I have friction top pails.

2. All of the honey has been heated; would it hurt the bees to feed them the fermenting honey? Should the honey be diluted with water? Is so, how much water should be added? If not advisable to feed in open, I can use the tin pan feeder in a super with a cloth over the side or corn cobs floating in honey. I have fed a small amount of sugar syrup that way, but never honey. I have Root's "A B C" and Pelletts "Productive Beekeeping," but the directions for feeding in those books are all for sugar syrup. In "Dadant System" mention is made of having fed honey, but no information as to how it was done.

ALABAMA.

Answers.—1. Personally, I deprecate the feeding of honey in the open, first because it excites the bees much more than odorless sugar syrup, secondly because it will be sure to attract bees from the neighborhood, thirdly because the strong colonies take much more than those that really need feeding, since these are usually the weaker colonies. It might be done for a day, but I would much prefer going to the expense of feeders, especially as the surplus feeders that might not be needed could be used for honey pails by simply replacing the friction-top lids that have to be punctured for feeding. If you still believe in doing it, try it a day or two.

2. Honey that is still fermenting is entirely unfit for wintering bees in the north. It would probably do for feeding, when the bees can fly every day, and discharge the feces which unfit honey would produce. I should even hesitate to feed back the heated honey for winter, unless it is perfectly free from any ferment. But it may do very well for Alabama, where the bees are not long confined. When we fed granulated honey, we simply laid it on a piece of strong paper over the cluster. Liquid honey is fed just like sugar syrup. If the honey is too thick for the bees to take it quickly, a little water may be added, but we should remember that this water must be afterwards evaporated. Tin pan feeders are not so successful as pails. But there are many ways. M. M. Baldridge, one of the pioneers of A. B. J., assured me that he had often fed by tipping the hive backward and pouring the honey into the entrance, closing the entrance for night. He used tight bottoms, nailed to the hive, and held that the propolis which glued the joints made the hive so tight that there was no leakage. He fed only as much as the bees could lick up during the night. I give you this without recommendation, as I did not succeed with it.

VENTILATING CELLAR

Would you please answer through your paper how I can ventilate my bee cellar 14x 16, 8 feet deep, built of 9-inch cement wall? The ceiling is 2x8 joists and packed with sawdust, and above is my work shop. It is built in sandy ground. But there is too much moisture. How can I get ventilation?

INDIANA.

Answer.—Put a wooden pipe or box 6 inches square coming from the outside through the entrance, at the bottom. This may be put in under the floor or at the side of it. Then put an escape pipe of the same size through one of the windows. If you have no windows, then put it through the wall, by cutting a hole at the surface of the soil, or through the ceiling. The escaping hole for moisture must be at least as large as the intake, and it must be at the top of the room, while the intake of air must be at the bottom, for the air will not circulate unless the outgoing air is warmer than the intake air.

If the land is too moist for lumber, so as to make it likely to rot, you may readily make such tubes of concrete. Be sure to put a stopper for each tube so that you may enlarge or lessen the passage of the air, for you will find at times it will cool or heat the cellar too much to leave free action to the air. A screen in each tube will keep mice away.

TRANSFERRED BEES

I have 3 colonies of 3-banded Italians that are doing well. But a friend of mine gave me 3 more colonies. I transferred them to my own hives, but had to leave him the honey and comb. I am anxious to bring them through the winter if possible and would like your advice. We are having fine weather and they are working on sugar syrup.

NEW YORK.

Answer.—That friend of yours should have given you also the brood combs, which could be of no use to him unless he put them in other colonies. You do not say whether you gave those bees sheets of foundation. If you did, it is quite possible that they may store enough sugar syrup and breed enough young bees to winter safely.

If you have no trace of disease in your apiary you might exchange a comb or two of brood from the other colonies with these, provided the others are quite strong. It may help these without damaging the others. I would urge you to winter them in a good, dry, cool cellar where you can keep the temperature about 45 degrees.

TRAVEL STAINS

I have some comb honey rather badly travel stained, because of leaving the supers too long on the hives. Can I do anything to bleach the combs? They are well filled and sealed.

WISCONSIN.

Answer.—Usually, the travel stains are mainly caused by propolis, which the bees appear to drop almost anywhere, when they have nothing better to gather. I do not believe that this propolis can be bleached. But the fumes of sulphur have bleaching properties and the use of those fumes tends to prevent the development of moths. So it will not be amiss to try burning sulphur under the crates of sections, placing some empty supers between the honey and the burning brimstone, so that the heat may not damage the sections. It may bleach a portion of the travel stains, though I doubt that the effect may be visible to any extent.

If you will scrape carefully all the propolis from the wood of the sections and sandpaper them lightly, you will give them an improved appearance.

BIG HIVES ET CETERA

By Stephen J. Harmeling.

At a beekeepers' convention in Puyallup a short time ago, a veteran and successful beekeeper advised his audience, and especially beginners, not to try the big hives until they had at least four years' experience with the smaller ones. In his apiary of one hundred and fifty colonies he had several ten-frame hives with the frames fourteen inches deep, having added a super fastened to a regular hive with staples. He had the supers piled high on these big hives and told the veiled company to lift one. It could not be done. They were too heavy with honey. The grand old man then looked at the beemen and beewomen and said: "Here is where I beat the other fellow." He certainly did beat the other fellows with the small hives. Nobody had the nerve to question his statement that the big hive is not adapted to the beginner's use.

Now, the waters of the Sound being between us, and anyhow being younger than this authoritative veteran, I have nerved myself up to suggest that probably the big hive, especially the "Modified Dadant," is exactly the hive for the beginner, because it is so easily manipulated. We have been trying them out in a small experimental way the past two seasons, and I am a complete convert. I would rather take care of two hundred and fifty "Dadant Modified" than fifty eight-frame or ten-frame hives with their double brood nests, Demareeing, etc., and could do it with less work and greater comfort. The season of 1922 not one of these big hives swarmed, but just piled up the honey. Today, July 10, 1923, one out of the lot has swarmed, and this one had the big brood nest congested with honey. I did not have supers enough last year. Brother Hawkins is absolutely right, beekeepers should have enough supers to meet any contingency. Dundas Todd said: "Two supers to this hive and you are fixed." I want four. Could get along with three, probably, but would rather have five. Most of my big colonies have three and four supers on them now, with white clover and fireweed in full bloom. It takes time for the bees to ripen and seal this honey. I want body and flavor and will not extract before August 1. Where would I be with two supers? Yes, Hawkins is right. Dundas, you grand old Scot, you are way off.

Last winter we left a number of these big hives just as they were on their summer stands without any packing whatever. They came out in spring much stronger than the packed two-story hives.

The new perpendicularly wired foundation is a wonderful time saver and makes the nicest worker brood combs I ever saw. I want to warn my friends that they must nail down the wedge solidly on the foundation and use five cement-coated nails instead of three, as I did at first, and not put the foundation in the frames until they are ready for the bees. If you are a little careless in this, you will have some fallen combs. Well nailed down, they are as firm as Gibraltar and will take the largest swarm in any weather.

"Why don't you raise your own queens?" said an old beekeeper to me. Well, raising good queens is a particular job, and the conscientious breeder who has the stock and knows how to breed good queens has the drop on me, and there are many such. What Jay Smith says about this matter is all to the point. It takes money, time and skill to produce good queens. Let us "act by the plumb" in this matter and not murder good queens when we get them. The directions on the cages are plain. Follow them strictly and don't be in a hurry. I wait thirty-six hours or more before I take out the cork or remove the pasteboard covering, and then wait four or five days before I open the hive to take out the cage. All careful breeders now use invert sugar in the cages and there is little danger of introducing diseases. I think I introduce safely 95 per cent, and some of them come clear across the continent. Yes, Jay Smith is right. He has an eye for beauty, too. His bees show it, and he is a good sport. He was here with us up in the Olympics and killed three bears with four shots. It was either three bears with four shots or four bears with three shots. Memory is a little cloudy on this point. I wish Hutzleman and the Madison Laboratories would make their foulbrood dope in solid form so we could get it through the mails. Express charges with us are just about prohibitive.

Excuse me, dear Editor, for this twilight wandering. Beekeeping is a science, not so very exact, but a progressive one, and from the little light I have, I am inclined to think that the "Modified Dadant" is much like the Eastman kodak: "You press the button and the kodak does the rest." If the beginner will put the right kind of bees in, give them a super early, and see to it that they have a plenty of room above as they need it, the hive will do the rest and get the surplus. If there is a better shortcut to get the most honey, let someone get on the soap box and tell us.

Washington.

Iowa Meeting.

On Tuesday, July 17, at the apiary of W. H. Daubendiek, located at the Frank Dorweiler farm, members of the West Bend Bee Club, County Agent Clark, Newman Lyle and Mr. Worthington, newly appointed bee expert from Ames, Iowa, assembled to introduce new queens.

As a result of this meeting, twenty new queens were successfully introduced and there is strong talk of more to follow.

Lyle certainly knows "how" to catch the old queens. After his first showing he made every one of the West Bend Club get down and do likewise.

No doubt much good will result to the West Bend bee business as a result of this meeting.

SCIENTIFIC DIET

I EAT my raisins and my yeast,
Absorb my iron and vitamines.
Three times a day I go to feast
Along these scientific lines.

I take my grape juice in between,
A good thing, as you must allow.
Affairs with me are all serene,
I'm boarding at the drug store now.
—By Wm. S. Adkins, in Judge.

I do not follow this advice
I save both health and money.
My plan will beat the other twice.
It is: "Eat lots of honey."

—Watts Watt.

The West Bend, Iowa, Bee Club.

ADVERTISEMENTS FOR HONEY

We have had a series of 20 model advertisements of honey prepared by an advertising specialist. This series will provide the beekeeper with suitable copy for his newspaper advertising for all occasions. Simply change the name and address on the ad to your own, and it is ready.

The following is a sample of this series. The entire series of 20 postpaid to any address for 50 cents.

ALMOST FORGOT!

The children were going on a short fishing trip. Buddie asked his chum, "Have you got all the fishing tackle there, Ted?"

"Yep!"

"And the bait?"

"Yep!"

"And the magazines?"

"Yep!"

"Don't forget the sandwiches!"

"They are all ready, Bud!"

"What about the drinks?"

"I've got 'em right here-"

"Wait! Let me see! have you got that honey there?"

"Gee! it's a good thing we're going over this! Mom, we almost forgot our honey!"

"I'll get it," said Buddie. "We can't miss THAT!"

HONEY is Good for Everybody, Everywhere.
Try a_____cent glass
CHARLES JENSON
AUBURN PARK
CHICAGO, ILL.

We offer a full line of selling helps for the beekeeper — labels, signs, folders, etc.

Everything in printing for the beekeeper.

AMERICAN BEE JOURNAL,
Hamilton, Illinois.

PORTER

BEE ESCAPE SAVES HONEY TIME MONEY

For Sale by all dealers
If no dealer, write factory

R. & E. C. PORTER, MFRS.
Lewistown, Ill., U. S. A.

(Please mention Am. Bee Journal when writing)

FINDING NEW USES FOR HONEY

A. E. Good.

"Wanted—A new idea" on how to make a greater use of honey.

To work honey in with other foods and make a hit with it on the market means experimenting, study and time to make a success of it, is my belief.

Perhaps someone could discover whether it could be used in these ways:

Honey and some food article or articles mixed together to make a butter, preserve or jelly?

Honey and some other article used as icing for cakes or to put on the tops of pies? Or for the inside of pies or cakes?

Honey used for a flavor for ice cream sundaes?

Honey and some syrup mixed for a spreading?

Honey and some fruit juice mixed for different uses?

I am not able to make honey advance in a larger use at present, so I ask these questions. Perhaps someone else may get an **idea** how to make honey pay better.

PACKAGE BEES

ONE DOLLAR A POUND

Queens one dollar additional—three-band and leather-colored.

Nuclei

2-frame Standard Langstroth.
2-frame Jumbo Langstroth.
3-frame Standard Langstroth.
3-frame Jumbo Langstroth.

Send for circular.

LOVEITT HONEY CO.
602 N. 9th Ave.
PHOENIX, ARIZONA.

A Novel Case

Mr. John Arbtin, of Des Moines, Iowa, has filed suit against the Board of Supervisors for damages to his bees, which were poisoned by the spraying of the fruit trees on the county farm when the trees were in bloom. The petition charges that the farm manager and the gardener were careless and negligent in the application of the poison and as a result that he is damaged to the extent of $1500 from the loss of bees and honey. The outcome of the case will be watched with interest, since it raises a new point in law.

Orders Being Received Now

HONEY GIRL QUEENS

For Spring Delivery

We have our second order from England calling for a $125 Honey Girl Queen; also orders from Father Jager and other well-known beekeepers.

The popularity Honey Girl Queens are enjoying seems pretty good proof of their merit.

If you are interested in building up the strain of your bees write us for further information on Honey Girl Queens. Prices range according to each individual Queen's merit.

CHAFFEE-CRITES BEE FARMS, Inc.
AMENIA, NORTH DAKOTA

QUEENS OF
Moore's Strain
OF ITALIANS PRODUCE WORKERS
That fill the supers quick
With honey nice and thick.
They have won a world-wide reputation for honey-gathering, hardiness, gentleness, etc.
Untested queens,---$1; 6, $5; 12, $9
Select untested--$1.25; 6, $6; 12, $11
Select test., $2; Extra select test., $3
I am now filling orders by return mail.
Safe arrival and satisfaction guaranteed. Circular free.
J. P. MOORE, QUEEN BREEDER.
Route 1, Morgan, Kentucky.

MACK SAYS

THANKS

be unto you who have so liberally shared us your patronage for the season just closing. We are installing a bigger and better equipment to take care of the increasing demand for MACK'S Bees and Queens for 1924. Why not send us a list of your Bee and Queen requirements?

HERMAN McCONNELL
Robinson, Illinois

CARNIOLAN and ITALIAN QUEENS $1.00

J. E. WING,
San Jose, Calif. 155 Schiele Ave.

JAY SMITH
HIGH GRADE
ITALIAN QUEENS
Route 3, Vincennes, Indiana.
A card will bring our catalog.

CO-OPERATIVE SALES ORGANIZATIONS ARE EDUCATING THE FARMERS

They Are Giving the Farmer the Consumers' Point of View—The Farmers Are Learning That Quality and Standardization Go Hand in Hand with the Advertising.

By Wylie M. Giffen
President, Sun-Maid Raisin Growers

Reprinted from the New York Journal of Commerce.

There has been, during recent months, an unprecedented growth of producers' marketing organizations. The growth of the co-operative movement as it relates to the marketing of farm products, is amply justified by the success which has attended the efforts of producers in California.

California farmers have successfully organized on a commodity basis and have in a measure solved their marketing problems in spite of their great distance from the marketing centres of the nation. There are several reasons for this success, among them being the fact that the producer and the consumer are brought closer together and because of this closer contact they have established a better understanding and appreciation between themselves.

After organization the producer realizes, as he never did before, that he, too, is a consumer and begins to think in consumer's terms with reference to his own product. The big thing, however, that has resulted from producer co-operation is the placing of the responsibility for the product where it rightly belongs—on the shoulders of the producer.

Following organization comes standardization of the product. The most logical step in marketing after standardization is advertising of the product. This is logical, since no one would be foolish enough to advertise a product which could not be depended upon; which had no standard of quality. Advertising fixes additional responsibility on the producer. The more extensive the advertising the greater that responsibility.

Quality must mean more than a stock word in a salesman's vocabulary. Quality must begin with the producer, because it is on him that the responsibility for the product rests. Eventually this means better agricultural methods; greater production; sanitation and cleanliness in the packing operations, as well as standardization.

Pooling of the product means greater efficiency in handling because of greater volume. All of these things, when they become effective in the scheme of marketing, are beneficial to the consumer, the trade and to the producer.

In the ten years of organized effort of the Sun-Maid Raisin Growers there has been a decided and continuous improvement in the product offered for sale. What is true of raisins will also be true of other products in a greater or lesser degree.

Short Weight in Pound Packages

Professor Wilson is right when he puts up a kick on short weight of the so-called pound packages of bees shipped from the South, and no doubt but these pounds were pounds when weighed, if weighed at all; that is, figuring bees loaded with honey and shippers are not so blind but that they can see a fair margin in honey at $3 per pound. The association of shippers will be without doubt, a move in the right direction. In reply to Mr. Wilson's question as to whether or not bees make special provision in the fall of pollen supply for early spring brood rearing, I can only speak from an experience in this locality, but they surely do it here, and to the queen's taste, in cells, generally around the broodnest; not all are covered with honey, either, but are nicely sealed and what is true of this locality in this direction is probably true in all other localities where pollen is obtainable.

In regard to your reply to the question as to corn producing honey, I would as soon expect it from a fence post. I have offered $1 per ounce for honey produced by corn, but have never had any offered. My offer is still open, but in case you get any be very careful not to get it mixed with the fence post product. unless said post is made from cement.

E. Fox.

HONEY SIGNS

Bring the Customer to Your Door

Use our inexpensive honey signs, printed in attractive red color on heavy cardboard, size 9½x11½ or 5¼x14 with the words:—

HONEY FOR SALE

These cards, by the roadside, will help sell your honey. State size wanted when ordering

15c each, $1.25 per dozen, postpaid

AMERICAN BEE JOURNAL, Hamilton, Illinois

Here Is Your Chance

From factory to you, our excellent made material at attractive prices. Send in a list of your needs of BEE SUPPLIES for the coming season and get quotations on it.

Langstroth portico 8 and 10-frame hives and supers, also 8-frame 4x5 comb-honey supers at cost prices, while they last.

CHARLES MONDENG

146 Newton Ave. N. and 159 Cedar Lake Road

MINNEAPOLIS, MINN.

BEEKEEPERS WE MANUFACTURE DOVETAILED HIVES, HOFFMAN FRAMES, SECTIONS AND SHIPPING CASES

Our hives are made of best grade White Pine, cut accurate and smooth to standard measure. Sections are made of Basswood polished on both sides. There are no better made.

We carry a complete line of everything used in the apiary. Our shipping facilities are as good as can be found anywhere. We want your business. We guarantee prompt and satisfactory service. Price list free.

MARSHFIELD MANUFACTURING COMPANY, Marshfield, Wis.

NATURE'S OWN SWEET
EAT HONEY
DELICIOUS-HEALTHFUL

Honey Labels

THAT HAVE BROKEN AWAY FROM THAT "ALL LOOK ALIKE" BUNCH

MADE TO SUIT YOUR IDEAS

Lowest Prices. Catalogue Free.

Liberty Publishing Co., STATION D BOX 4001 **Cleveland, O.**

WE MANUFACTURE FOUNDATION

Our Specialty is

Working your wax into foundation, for cash or wax in payment. Write us for list of supplies and get our prices on the best Hives, Sections, Frames, etc made in Wisconsin.

GUS DITTMER COMPANY

AUGUSTA, WISCONSIN

EXPERIENCES WITH BEES

By E. M. Barteau.

One morning one of the best queens in the apiary was discovered dead at the hive entrance, this season's queen, too. I never saw a more perfect set of brood-combs, ten frames of brood, some of them filled solidly with sealed brood to the extreme corners. Five virgins were found in the hive. Why hadn't they swarmed? Why hadn't they declared war on each other? The weather had been ideal for swarming for several days.

One virgin was left in the colony, the others given to other colonies.

The queen left with the colony was seen several times on her flights but she failed to mate and died in about two weeks.

All the others became drone layers. The weather was perfect and an abundance of drones in the fifty colonies that comprised the yard. I wonder how or why this happened.

A clipped queen was found crawling in front of the first row of hives. She was headed straight for California and hustling as though hoping to get there before sundown. A beautiful job to find where she belonged. At last it was found to be the corner hive of the front row. She had passed five hives and was still traveling full speed. The next day a queen was noticed on the alighting board of the hive adjoining the truant; she was being fed by two or three workers. Forgetting for the moment the episode of the day before, I hustled her into the hive, thinking she had wandered out. Immediately the occurrence of the previous day was recalled, the hive opened and the queen found balled on the bottom board. Again she was returned to her hive. A week later the colony was examined. Our wandering lady was at home, that was all —she had failed to lay an egg. This queen had been laying normally until she suddenly went "dippy." Positively they had not swarmed. I'm still wondering.

I so rarely lose a queen in introducing, I haven't thought it worth while to build special cages, but have wondered if it wouldn't be a good plan to use a cage fashioned after the Miller cage, but built wide enough to contain twelve or fifteen young bees (taken from the hive) and confined with the queen. I have not seen this advocated, but it looks good to me.

Behind the apiary is a very dense hedge of shrubbery. Into this thicket I tossed a queen which I had killed; two or three days later two or three bees were noticed threading their way through the maze of undergrowth. Investigation disclosed nearly a handful of dead bees with the queen and a number of live ones. Looked as though they had starved rather than abandon their defunct queen. Since then the hive tool digs a little grave.

In requeening my little yard of fifty odd colonies I use thirty to thirty-five queens each year, requeening one-half the colonies one year, the other half the next year, besides replacing any undesirable queens. In introducing I follow the method sent to and published by the American Bee Journal about a year ago. This season I did my requeening at a time when there was no flow of nectar. The bees had been hanging in their hive for three weeks, excepting those busily engaged in chasing out the drones, and every colony had been so engaged during this period, yet every queen was accepted. I have lost but two queens in three years in introducing. In one instance there was a drone-laying queen in the super which had squeezed through the excluder, in the other case the colony was being quickly robbed in a wholesale manner by another colony and I swapped places of the hives.

If people who lose such a large percentage of queens will adopt or try the method as described in the American Bee Journal, I'm sure their losses will be practically nil.

I have tried, in a limited way, getting queens mated from an upper story. When cells have been built below and a frame with cell placed in an upper story with an excluder beneath it and an auger hole in rear of super I have succeeded in getting the queen mated every time.

When no cells have been started below and a cell from another colony given (in a protector) failure has resulted in every instance. The young queens apparently emerging all right, but disappearing just as quickly.

New York.

REQUEENING BLACK COLONIES

By John Protheroe.

I read with interest Mr. Newman Lyle's article on requeening black colonies, published in the August number. At the same time, I think the method described is open to criticism and has points of inferiority when compared with the Sams method. One's eye is immediately attracted by the illustration on page 388, showing the excluder tilted up on end over the exposed frames. Surely there is quite a risk of the queen's escaping during this operation and either scuttling back among the frames or else taking flight. How much better to deal with a queen on the top of an excluder with her head thrust down between the wires in a futile effort to get back among the brood frames; here she is stationary and helpless and an easy victim. When lifting off the excluder in order to look underneath, I should anticipate a mad scamper of excited bees around the edge of the binding strip, quite probably including the queen. This is certainly not the way to deal with some of the epileptic hornets which it has been my fate to requeen.

No; I vote for the method of Mr. C. L. Sams, of North Carolina. An empty hive body is placed above the brood chamber of each colony to be requeened. The bees are smoked and drummed up, hive after hive. After completing the number, you return to the first and very carefully insert an excluder under the empty containing the drummed bees. This must be done carefully, for a jar may dislodge a cluster and cause it to fall back on the tops of the frames before the excluder is properly in place. It is just as well to scrape the tops of the sides and ends of the brood chamber free of propolis before beginning the operation. Excluders are thrust under each empty body, or you may proceed more slowly, using one or two. The clinging bees are then dislodged from the walls and cover of the empty with a chicken's wing (better than brush or hive-tool). Don't use smoke; blow on the sticky clusters with your breath or stir them up with the wing. There is the black lady, with her head desperately thrust down between the wires! The method never fails with me; "it's as easy as walking down stairs" and as quick as sliding down the banisters. On every occasion this summer when I have failed to find the queen, there has proved to be none there.

Mr. Lyle does well to lay stress on a steady, rhythmical clubbing. One beeman to whom I had explained the treatment complained that it was no good with him. Afterwards I discovered that what he had given them was a rapid, feverish tapping. A carpenter's mallet is the best instrument; it does not bruise wood or even paint. Strike once a second on the ends; this jars all the frames. Also, a thorough preliminary smoking at the entrance is an important part of the treatment. It is not necessary to fit the hive body with anything for the bees to cling to; walls and cover are quite sufficient and they are easily cleared of bees. Some of the epileptic hornets to which I have referred above will kill a new queen even after she has been laying for several days; so leave such colonies alone, having once handed over a handsome Italian to their tender mercies.

Virginia.

New Sale of Timber

A sale of timber totaling 80,000,000 board feet on the Mormon Lake and Sawmill Springs unit of the Coconino National Forest in Arizona has been advertised by the department. The average price for all species is $2.25 per thousand feet. Most of the timber is western yellow pine. The contract period extended over five years and the purchaser may remove the timber at a rate not to exceed 24,000,000 feet a year. The sale covers 28,000 acres. The total value of the timber is $180,000. This however, does not include additional receipts, since the sale merely replaces other sales now about to expire.

MONEY AND SATISFACTION FOR YOU

Save one profit by buying direct from factory. Standard, Jumbo and Modified Dadant Hives; cedar or pine. Write for catalog.

A. E. BURDICK CO.,
Sunnyside, Wash.

WESTERN BEEKEEPERS!

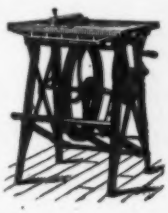
We handle the finest line of bee supplies. Send for our 1923 price list. Our quotations will interest you.

The Colorado Honey Producers' Association, 1424 Market St., Denver, Colo.

BARNES' FOOT POWER MACHINERY

Read what J. E. Parent of Chariton, N. Y., says:

"We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames and a great deal of other work."



W. F. & JOHN BARNES CO.,
995 Ruby St., Rockford, Ill.

INDIANOLA APIARY CO.

Italian bees and queens delivered as follows:

1-lb. package with untested queen	$3.25
2-lb. package with untested queen	5.25
3-lb. package with untested queen	6.25
Untested queens, each	1.00
Tested queens, each	1.50

Satisfaction guaranteed. Prompt service a specialty.

J. W. SHERMAN, Indianola Apiary Co.
Valdosta, Georgia.

DARK RACES OF BEES

By C. Renshaw.

There is an increasing interest being taken in the larger hive and a growing one in the more prolific races of bees, such as the Carniolan, Caucasion and Cyprian.

There is a noticeable increase in the advertisements for the two C's.

If the article on page 75 of the February issue by C. A. Gorbatcheff is true, 'tis time to wake up, and no one is more capable of testing out the three races above mentioned than the Dadants, for the big hive will come nearer accommodating the extremely prolific queens and you can probably receive importations through the proper channels.

Ralph Benton, author of the correspondence course in the University of California, recommends the use of hives larger than the ten-frame and the adoption of the more prolific races by the skilled and attentive apiarist.

I am writing this mainly to ask two questions: Have you ever given the races above mentioned the trial they deserve? If not, will you consider doing so?

Mr. Ralph Benton says the Cyprians have the largest tongues of any honeybee, the Carniolans have medium length and the Caucasians have long tongues; they are strong flyers, good searchers and storers of honey; are very prolific, but should be kept in large hives, to control the swarming instinct; that they breed in and out of season and that their brood-rearing is less inclined to fluctuate with the honey flower. He also claims the Caucasians and Carniolans will work in cooler weather than other races.

I am writing Mr. Benton in regard to breeding stock, but owing to my ten-frame hives may not be able to give them the proper test. I regret having equipped with the ten-frame hive, owing to its size, but do not feel that I can afford to make the change at present. I intend, some time in the future, to increase my colonies and dispose of the tens in that way.

The alfalfa in Kern County was a total failure last year and some bees had to be fed. Some counties favored with fall flowers had a good flow. H. R. Smith, of Fresno, took over ten tons from 260 colonies, and lost half that much by having them blocked full for twelve days—no supers or help. The main source of honey was from a yellow clover that grows like white sweet clover in size and shape, but is a dry weather clover, blooming from about the first of August until the first cold spell in September, and is found only in the alkali belt of the San Joaquin Valley. The common name of it is jackass clover.

California.

We gave the Cyprian race all the trial they deserve, without doubt. We handled dozens of queens of that race and kept colonies of Cyprians in our apiaries until forced to kill off their queens owing to the irascibility of their bees. They are good workers and pretty bees, but if they were even better in honey production, beekeeping would be a curse with apiaries of that race.

We were probably the first to import Carniolans into this country; but, although they were prolific and good honey gatherers, we disliked them because of their propensity to excessive swarming. Another reason that made us dislike to keep them was that it is very difficult to detect a slight mixture between that race and the common black bee Then the keeping of both the Carniolan and the Italian in close proximity would increase the amount of hybridizing and make the difficulty of keeping any race pure just that much greater.

The Caucasian we tried but little. They are quiet and very prolific and, we believe, are liked by all the beekeepers who gave them a trial.

You will take note that our experiences with large hives were practically all made with Italian bees. It was upon the Italian bees that the senior Dadant based his calculations of how many cells were needed in a brood chamber for spring breeding. Although we do not like the Langstroth frame as well as the deeper frame, for reasons given formerly, yet good results may be obtained from double-story eight-frame hives, such as Dr. Miller used, or from story-and-a-half ten-frame hives.

The jackass clover, mentioned by you, is called also stinkweed, and its scientific name is Wislizenia refracta. Pellett's "American Honey Plants" speaks highly of it as a California honey producer and quotes Richter, who says that its honey is "water white, mild in flavor and of good body." Large crops of honey are harvested from this plant.—Editor.

NOTES FROM ENGLAND

Queens Taking Flight

By C. T. Sanctuary.

In the July number a correspondent asks if queens ever leave the hive in winter, as he has heard of alleged cases. I am able to state on good evidence that this does sometimes take place in England. A neighbor of mine, Mr. Emery, a beekeeper of thirty years' experience, a close student of bee behavior and an expert of the B. B. K. A., was watching the bees flying in and out of one of his hives on a mild day in midwinter in 1921.

He was greatly surprised to see the queen, a fertile queen and the mother of the colony, run out on the alighting board. She ran backwards and forwards, beating her wings and trying to fly, but was not able to rise into the air Finally she fell over the edge of the board into the grass.

You can have cash for your wax and old combs or cappings at the market price, or we allow a little more in exchange for supplies

Write for our terms and prices

"falcon" Supplies, Queens, Foundation

Booklet, "Simplified Beekeeping for Beginners" free

Write for catalog

W. T. FALCONER MFG. COMPANY, Falconer, (NEAR JAMESTOWN) N. Y., U. S. A.

"Where the BEST Beehives come from"

Mr. Emery picked her up and placed her back on the alighting board, when she ran into the hive. If he had not been watching the hive at the time and seen her, it is probable that she would have been lost, as she could never have crawled back into the hive, which was on legs.

Shortly before this incident occurred, I read an account in the British Bee Journal by a beekeeper who saw one of his queens actually take flight on a warm winter day and return to the hive after a few circles in the air. It was stated at the time that this quite frequently occurred. It stands to reason that our changeable English winters might encourage this behaviour.

Really cold weather early in December will put the queens off their laying, and then a few warm days will allow the bees to fly, and the queen, if she wishes to do so.

I have had many queens disappear inexplicably in mild winters, and think this is a possible cause.

Live Worker Sealed in Queen Cell

A few days ago I was destroying cells in the upper story of a demareed hive. I pinched the top off a rather long sealed queen cell, and out fell an undersized grub. Underneath the grub, with her head down by the royal jelly at the cell base, was a live worker. She was rather draggled all over, and somewhat dazed.

I pushed her out of the cell, but she at once returned and nosed down into the bottom of the cell again, where she remained motionless. The grub had been lying upon her back near the top of the cell. I have several times seen it stated in books that the reason workers are sometimes found in queen cells is that they get in after the queen has emerged, and the cap is then shut down again, but the above experience proves that they may be shut in when the cell is first sealed.

Dadant Tunisian Frame

I came across the Dadant Tunisian frame in Tangiers this spring. The dimensions of the comb are:

Width at top_____35 cm.
Width at bottom____30 cm.
Depth _____35 cm.

The extracting combs are 35 cm. by 15 cm. These brood combs tapering downwards enable the frame to be lifted from the hive without any fear of rolling the bees over against the walls. An excellent device for very vicious bees.

The bee of Tunis is inky black, and a fiend in temper. M. Madoulet, a French gentleman, has an apiary at Tangiers which he very kindly showed me.

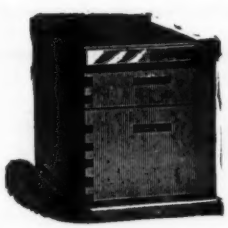
I found the same coal black bees in Southern Spain. In the Moorish palace of the Alhambra at Granada, in the Court of the Lions, there is a large colony of these very black bees in one of the walls.

At Madrid the bees are not of the same inky blackness as those of Tunis and Andalusia, but have hairs of a lighter shade, more like those of Northern Europe.

A Successful Selling Campaign

Our attention has been called to an advertising campaign put on by Mr. Axel Holst of St. Thomas, Virgin Islands. He found that the ordinary standing advertisement in the local papers did not prove very satisfactory. He tried the plan of running a series of ads every day for a month, never skipping a day and changing the copy which appeared each day. Since the same ad never appeared more than once, the readers soon began looking to see what he had to say today. The results were beyond expectations and much interest was aroused in St. Thomas and the neighboring islands. While the sales previously had been very slow, several hundred dollars' worth of honey were sold during the period of the advertising and the sales continued after the campaign was discontinued.

We have read this series of ads with much interest and note that but comparatively small space was used in each issue. A few of the ads occupied not more than three inches of single column space. The largest space was used in the last one, which bade goodbye to the readers, but even this was only about half of a single column in size.



MR. BEEKEEPER—

We have a large plant especially equipped to manufacture the supplies that you use. We guarantee all materials and workmanship. We ship anywhere. We allow early order discounts and make prompt shipments. *Write for free illustrated catalog today*

We pay highest cash and trade prices for beeswax

LEAHY MFG. CO., 90 Sixth Street, Higginsville, Missouri

J. W. ROUSE, Mexico, Missouri Texas Distributors, A. M. HUNT & SONS, Goldthwaite, Texas

HONEY WANTED

Our observations lead us to believe that as a general thing honey producers would be better off financially if they sold their honey crops in bulk as soon as produced. There possibly are a few exceptions.

However, we wish to remind beekeepers that we are ready at any time of the year to take in small or large lots of extracted honey.

Send us a sample and advise quantity you have and the price wanted.

HOFFMAN & HAUCK, Woodhaven, New York

ANOTHER SERVICE OFFERED BY THE LEAGUE

Today is the day of keen competition. With the price of honey as low as it is, it is necessary for the beekeeper to reduce the overhead charge, to secure at less cost his containers and supplies, and to economize as much as possible. Every item of expense must be closely scrutinized to see if one or two cents might not be shaved from its cost. If an article can be obtained which will answer two purposes, its cost will be reduced 50 per cent. The American Honey Producers' League has such an article for the beekeeping fraternity.

If honey is to take its rightful place in the diet of the people and become a staple rather than a luxury, it is essential that more advertising be done. The value of honey as a food must be stamped upon the public's mind and then recalled from time to time. One method of reminding the public is by means of the lithographed pail. Have you ever watched laborers as they go to work? It is surprising to see how many use pails of every description in which to carry their lunch; possibly many of these pails formerly carried honey. If these pails had been lithographed, honey would have been advertised wherever the workmen went. This is one means of advertising which should be given serious thought by beekeepers. Thus a lithographed pail has two functions—it is a container and is also a means of advertising.

The League, in its desire to serve the beekeepers of the country, has placed the design for such an attractively labeled lithographed pail in the hands of various companies. As soon as there is sufficient demand for these pails, and standard glass bottles and jars with lithographed covers, the League is ready to supply the demand.

S. B. Fracker.

GETTING THE BROOD NESTS FILLED WITH STORES

As users of the large hive, not requiring a food chamber or second hive body to be left with the colony in winter, we have the problem of judging the manipulation of supers in the fall so that each colony is left with plenty of stores in the brood nest. If supers of drawn comb are given too freely, brood nests are empty, after extracting. It would seem easy to judge between extravagance and reserve in this matter, but none of us are entirely fitted to the task. We are coming nearer to the full amount of stores every year, however.

Among other things, we have found that, during the fall flow is a fine time to have foundation supers drawn, since the bees show reluctance in this work at this time of year and tend to crowd their brood nests readily. By careful use of both comb and foundation a hive full of stores results.

Some Recent German Bee Books

The last two weeks has seen the receipt by us of three German bee books, which will make a welcome addition to the library of any beekeeper who can read the German language.

The Die Bienenweide, by Alois Alfonsus, is a 165-page, paper-bound book containing six photographs and describing honey plants of Austria and surrounding country. It gives the dates of blooming periods, kind and quality of honey produced, and their influence on the total honey crop of the country.

Die Brutkranheiten, by Dr. Enoch Zander, is the third edition of this worthy book, describing diseases of brood of the honeybee, treatment, etc.

Die Zucht der Biene, by Dr. Zander. This is the second edition of this cloth-bound book, which is a general book on beekeeping by this estimable author.

Timber Shortage Looms

America faces an inevitable timber shortage unless something is done soon, according to the Forest Service, which calls attention to the fact that the timber supply has been mined as much as coal has been taken from the ground. However, if intensive forestry methods were practiced on all forest land, which is some 470,000,000 acres, the problem could be greatly alleviated. Three things are necessary: To stop unrestrained forest exploitation; to reduce waste in the use of timber; and to increase timber production to the full capacity of the land. It goes without saying that protection from fire, insects and disease are necessary.

The Jumbo—the Cheapest and Best Big Hive

Cheapest—

Jumbo Frames cost only ½c more than the Standard Hoffman Frame.

Jumbo Bodies but 15c more than the Standard 10-frame Body.

And a set of 5 K. D. Jumbo Hives with M. C. complete but $1.25 more than 5 Standard M. C. 10-frame hives.

Best—

Jumbo meets every requirement for the producer wishing equipment larger than Standard.

Jumbos fit regular 10-frame equipment, are therefore used with greatest efficiency and economy in well organized apiaries.

Plenty of brood and storage space.

WEIGH THESE FACTS CAREFULLY AND USE JUMBOS FOR BEST RESULTS

THE A. I. ROOT CO., COUNCIL BLUFFS, IOWA

Crop and Market Report

Compiled by M. G. Dadant

For our October crop and market report we asked the following questions of reporters: 1. How does your crop of honey compare to last year? 2. How is honey selling? 3. Have you any offers, jobbing and wholesale, from dealers, and what are they? 4. What prices are you asking locally? 5. Will you need honey to supply your customers in addition to what you have? 6. In what condition are bees going into winter quarters?

THE HONEY CROP

Substantiating our report as contained in the American Bee Journal for the last two or three months, reporters are unanimous in stating that the crop will be unusually small this year.

In fact the only states reporting anything like a normal or above average crop are as follows: Maine, Vermont, Massachusetts, Connecticut, New York, Michigan, Minnesota, Montana and New Mexico.

The entire balance of the country is either much below last year and much below normal or else has had a complete crop failure.

The large honey producing and shipping states like California, Idaho, Colorado, Wyoming, Nevada and Iowa are reporting short crops, with very much less to ship than usual. A resume of the crop in different sections is about as follows: New England states above normal, New York slightly above normal, entire southeast not over 25 to 50 per cent of normal, Texas 85 per cent crop in cotton section, 25 to 40 per cent in other sections; Michigan 80 to 120 percent of normal, Wisconsin 25 per cent to 150 per cent of normal, Minnesota 120 per cent, with sweet clover sections of Illinois and Iowa 50 to 70 per cent; entire balance of Central West about 20 per cent of normal. Even the sweet clover sections of South Dakota and North Dakota are reporting a much shorter crop than last year, owing mostly to drought. They have a fair crop in the irrigated sections, but the rest of the plains regions seem to be very short.

In all the west, Montana probably has fared the best from reports coming in that the crop would be 250 per cent of last year and others that it would not be over 125 per cent. At any rate they are having an unusual crop. New Mexico likewise, which had practically a failure last year, is having an exceedingly large crop this year. Colorado, Wyoming and Nevada report from 25 to 50 per cent of a normal crop. Wyoming has suffered largely through the heavy hail which has damaged plant life everywhere. Idaho reports about 35 per cent of normal and Washington and Oregon only in the neighborhood of 50 to 75 per cent.

The northern regions of California may have 80 per cent of normal, but the southern counties will make up with this with almost a total failure, and in no instance to exceed 25 per cent of a normal year.

HOW IS HONEY SELLING?

In practically all sections honey is selling excellently. When we realize that the demand for honey does not ordinarily come until the fruit has been harvested we can assure ourselves that honey is selling well, since many salesmen are already getting voluntary orders for honey or inquiry for the same.

OFFERS FROM JOBBERS

Offers from jobbers have been scarce and a majority of those who have made offers have made them at low prices in an effort to get bargains. We learn of one offer made on white sweet clover honey in Colorado at 7¾c and comb honey at $4.00 per case. Other offers range about 8c for white honey and $4.25 to $4.50 per case for No. 1 comb. Louisiana reports offers on their crop of from 6½ to 8c per pound, which is fairly good compared to last year, although probably not as much as can be realized.

PRICES ASKED FOR HONEY

In practically all instances the retail price generally will remain the same as last year. By this we mean that the beekeeper who held his honey for a good price last year is holding the price this year. The price cutter of a year ago is coming up to the standard of the stable honey producer and merchandiser. We do not believe that there will be the competition of cut price honey this year that there was a year ago, and such little as is offered will quickly be nabbed up, leaving the good honey salesman with a strong demand and at his own set prices.

Western honey is being offered at a price of about 10c per pound in carloads for white sweet clover, and $5 per case for No. 1 and fancy comb honey. We do not believe these prices out of the way, and think that the crop will quickly sell at these figures.

In fact we know of several carloads which have sold at the above figures, although there are probably considerable amounts of honey which can be secured at much below this, owing to the fact that the beekeeper is not posted on the honey situation.

We learn of a carload of white sweet clover honey in Iowa being sold at 10c and of other lots being held as high as 11½c jobbing.

BEEKEEPERS NEEDING HONEY

Most beekeepers are apathetic as to the demand for the honey in their territory and believe that they have sufficient on hand to fill the same. However, probably 35 per cent of the beekeepers reporting, stated that they doubted whether they would have sufficient honey to supply their own local demand, and many of the jobbers of honey stated that they would probably just be able to take care of their regular customers and would not be able to serve new customers who were desiring honey stocks.

This condition bodes well for the disposing of the entire honey crop before the new crop year comes. In fact it is doubtful whether there will be sufficient honey to supply the demand, and again we will come to the point where the consumer will have to return to a substitute for honey, because honey will not be available.

There is certainly an exceeding shortage of comb honey, and this should rule at good stiff prices. We do not believe that the central western and eastern beekeeper is asking enough for his comb honey in view of what comb honey is being offered for in the west.

The large producer of last year who insisted that he get remunerative prices for his honey or he would not sell is in good luck this year if he carried over some of his last year's crop.

In fact, we believe this should be the rule every year where a beekeeper can afford to carry his surplus crop over from year to year. He should either get remunerative prices or refuse to sell. Short crops come often enough so that this action would be justified.

CONDITION OF BEES

In practically all sections of the country the bees will go into winter quarters in very good shape, owing to the fact that moisure during the latter part of August has put the fall bearing honey plants in very fine condition and the bees are filling up well. In a few sections there is some difficulty and danger of starvation, especially in the south and southeast. However, we look for bees to go into winter quarters in normal condition.

CLASSIFIED DEPARTMENT

Advertisements in this department will be inserted for 5 cents per word, with no discounts. No classified advertisements accepted for less than 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 15th of each month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

As a measure of protection to our readers, we require references of all new advertisers. To save time, please send the name of your bank and other references with your copy.

BEES AND QUEENS

NEW HONEY in October—Atwater.

MERRILL'S QUEENS—$1.00 each.
R. E. Merrill, Muncy, Pa.

SEE our display advertisement on page 516.
Loveitt Honey Co.

TRY PETERMAN'S QUEENS—They mean 100 per cent quality, select, thrifty layers, well laid up before caging bred from Jay Smith choice breeders by a thoroughly experienced breeder who is absolutely honest and reliable. Repeat orders prove this. Circular free. Prices, after July 1: 1, $1; 6 for $5.50; 25 at 90c each.
H. Peterman, Lathrop, Calif.

FOR SALE—Bright three-banded Italian queens, 1 to 12, $1.25 each; 13 to 25, $1.15 each; 10 per cent discount when ordered 4 weeks or more in advance. Safe arrival and satisfaction guaranteed. Ready to ship June 1 to June 10.
R. B. Grout, Jamaica, Vt.

HARDY ITALIAN QUEENS, $1 each.
W. G Lauver, Middletown, Pa.

BEES AND QUEENS at reduced prices. Cypress hives for sale. Write for terms.
Otto Diestel, Elza, Ga.

PETERMAN'S 100% QUEENS—$1 each, 6 for $5.50. Give them a trial.
H. Peterman, Lathrop, Calif.

FINEST ITALIAN QUEENS—$1.00 each.
Wm. R. Stephens, Wingate, Ind.

FANCY THREE-BAND BEES nuclei and queens. Queens, balance of season, select untested, $1 each, $10 a dozen. Select breeding queens $6 each.
J. L. Morgan, Apalachicola, Fla.

QUEENS bred from choice Jay Smith breeders, $1 each, 6 for $5.50; every queen guaranteed select, thrifty layer.
H. Peterman, Lathrop, Calif.

PURE Italian and Carniolan queens, the best of either race, $1 each. J. E. Wing.
155 Schiele Ave., San Jose, Calif.

CARNIOLAN-ITALIAN CROSS—Finest utility queens yet. While they last, $1 each.
Geo. W. Coltrin & Son, Mathis, Texas.

QUEENS for the balance of the season of 1923. Write and get our prices.

O. P. Hendrix & Son, West Point, Miss.

SELECT UNTESTED three-banded leather colored Italian queens by return mail at $2. Orders booked 15 days ahead, $1.50. Send for prices on large orders. These bees hold Indiana record for comb-honey average per colony in a run of ten years.
Charles Kennard, Knightstown, Ind.

REDUCTIONS in price on golden queens July 1st: selected queens, one, 90c; half dozen, $5; dozen, $9. Pure mating, safe arrival in U. S. A. and Canada. Health certificate furnished. Tillery Bros.,
Rt. 5, Greenville, Ala.

QUEENS—High grade Italian queens, three-banded; also goldens. Untested, $1 each; twelve, $9.00; tested, $1.50 each; twelve, $15. Package bees. Safe arrival and satisfaction guaranteed.
P. O. Watkins, Cullasaja, N. C.

FOR SALE—Three-banded Italian queens, untested, $1 each; 6, $5.50; 12, $10. Tested queens, $2 each.
Robert B. Spicer, Wharton, N. J.

CARNIOLAN QUEENS—Pure silver gray Alpine stock. Good queens, ready to go. Normal conditions. Satisfaction guaranteed. Price, untested: 1, $1.00; 6, $5; 12, $9; 25 or more, 70c each.
M. G. Ward, Lathrop, Calif.

"SHE-SUITS-ME" queens the rest of the season, $1 each.
Allen Latham, Norwichtown, Conn.

BIG, BRIGHT ITALIAN QUEENS, 75c each, by return mail.
P. B. Skinner, Greenville, Ala.

THREE-BANDED ITALIAN QUEENS—One select untested, $1.00. One select tested, $1.50. Satisfaction given.
J. Allen, Catherine, Ala.

BEES BY THE POUND; also Queens—Booking orders now. Free circular gives prices, etc. See larger ad elsewhere. Ault Bee Co. (Successors to Nueces County Apiaries), Calallen, Texas. E. B. Ault, Prop.

SEE my display ad, page 529.
Jes Dalton, Bordelonville, La.

LATE QUEENS—I can mail queens any month of the year. October queens, untested, 75c each. Tested queens only can be mailed after November 1st at $1 each, for the months of November, December, January and February. Send your order; I have the queens.
D. W. Howell, Shellman, Ga.

GOLDEN ITALIAN QUEENS—Producing bees solid yellow to tip from record honey gathering breeders. Package bees and nuclei. Circular 1924 ready.
Dr. White Bee Company, Sandia, Tex.

PRICES on Nordan's three-banded Italian queens for remainder of the season: Untested queens 75c each, 12, $8.40, 100 $70. Select untested 90c each, 12 $10, 100, $80. Select tested $1.50 each, 12 $16.20, 100 $125. Safe arrival and satisfaction guaranteed. M. S. Nordan, Mathews, Ala.

HONEY AND BEESWAX

SEE our display advertisement on page 516.
Loveitt Honey Co.

FOR SALE — White and amber extracted honey. Write for prices. State quantity wanted. Dadant & Sons, Hamilton, Illinois.

FOR SALE—Our own crop white clover and amber fall honey in barrels and cans; also white alfalfa in cans. State quantity wanted and we will quote prices. Samples on request.
Dadant & Sons, Hamilton, Ill.

FOR SALE—White honey in 60-lb. cans; also West Indian in 50-gal. barrels. Samples and prices on request. A. I. Root Co.,
23 Leonard St., New York City, N. Y.

BEESWAX WANTED—We need large quantities of beeswax and are paying good prices now. Ship to us at Hamilton, Ill., or Keokuk, Iowa, or drop us a card and we will quote f. o. b. here or your own station, as you may desire. Dadant & Sons, Hamilton, Ill.

FANCY CLOVER HONEY in new 60-lb. cans 2 to case; new crop. Sample 20c.
D. R. Townsend, Northstar, Mich.

FOR SALE—No. 1 white comb honey, $7 per case of 24 sections; No. 2 white, $6 per case; 12 or more cases, 50c per case less. Clover extracted in 60-lb. cans, 14c per lb.; clover in 5-lb. pails, $10 per dozen; dark extracted in 60-lb. cans, 10c per lb.; baker's honey in barrels, 9c lb.
H. G. Quirin, Bellevue, Ohio.

1923 CROP clover honey in 60-lb. cans, also 5 and 10-lb. pails. Prices upon request. Sample 10c.
Sioux Honey Association, Box M. 26,
Sioux City, Iowa.

MY CROP of comb and extracted honey is now ready, Bee-Dell quality, graded with a Lewis grader, priced right, packed right and guaranteed to please you. Sample 15c.
Bee-Dell Apiaries, Earlville, N. Y.

FOR SALE—Extracted white clover and basswood honey mixed, mostly basswood of finest quality, in 60-lb cans, at 13c per lb., or $7.80 per can. Customer pays the freight; cash must accompany all orders. Readers of American Bee Journal who have bought honey of me before know the quality and purity of this honey.
G. A. Barbisch, Rt. 1, La Crescent, Minn.

HONEY FOR SALE—In 60-lb. tins; water white orange, 15c; white clover, 13c; for immediate shipment from New York.
Hoffman & Hauck, Woodhaven, N. Y.

CHOICE extra fancy white clover honey in new 60-lb. cans, 120 lbs. net, $14.40. Sample 20c.
Edward A. Winkler, Joliet, Ill., Rt. 1.

FOR SALE—Very fine quality of raspberry-milkweed honey in new 60-lb. cans.
P. W. Sowinski, Bellaire, Mich.

SUPPLIES

NEW HONEY in October—Atwater.

SPECIAL PRICES—We are offering at specially low prices some very high grade material in shipping cases, frames, hives and miscellaneous which represent items we no longer carry regularly in stock or which have to be closed out to make room for new stock specially equipped to take Dadant's Wired Foundation. If interested, write for list; we can save you money.
Dadant & Sons, Hamilton, Ill.

HAVE YOU any Bee Journals or bee books published previous to 1900 you wish to dispose of? If so send us a list.
American Bee Journal, Hamilton, Ill.

CONNECTICUT and Rhode Island headquarters for Root's Beekeepers' supplies.
A. W. Yates, 8 Chapman St., Hartford, Conn.

ATTRACTIVE LOW PRICES—Write us for list of odds and ends, shipping cases, hives, etc., first grade, priced to save you money.
Dadant & Sons, Hamilton, Ill.

WESTERN BEEKEEPERS—We can demonstrate that you can save money on buying bee supplies of best quality. Write for our latest price list.
The Colorado Honey Producers' Association,
Denver, Colo.

FOR SALE—300 full depth 10-frame supers with drawn combs built from full sheets of wired foundation. Eight combs to the super. No brood ever been reared in these combs. Supers are like new; $5.00 each. 10 per cent off for 100 or more.
John C. Bull, Valparaiso, Ind.

FOR SALE—Get our special prices on tin, glass and paper honey packages. Shipments from Detroit, Chicago or Grand Rapids.
A. G. Woodman Co., Grand Rapids, Mich.

FOR SALE

SEE our display advertisement on page 516.
Loveitt Honey Co.

FOR SALE—Good second-hand 60-lb cans, 2 cans to a case, boxed, at 60c per case, f. o. b. Cincinnati. Terms cash.
C. H. W. Weber & Co., 2163 Central Ave.,
Cincinnati, Ohio.

FOR SALE—300 colonies of bees with complete extracting equipment. Your correspondence solicited.
Scott McClanahan, Notus, Idaho.

FOR SALE—Our own crop white clover and amber fall honey in barrels and cans; also white alfalfa in cans. State quantity wanted and we will quote prices. Samples on request.
Dadant & Sons, Hamilton, Ill.

FOR SALE—100 or less colonies of bees in 10-frame L. hives. Wired foundation in frames. An extra nice lot.
A. W. Smith, Birmingham, Mich.

FOR SALE—35 colonies extra choice Italian bees. Absolutely healthy. Stores for winter. A real bargain. Write.
Guy Polley, Brimson, Mo.

FOR SALE—160-acre farm in northern Oklahoma. Good wheat land. Good 4-room house, good barn, shade, small orchard; $9,000. Will accept bees rightly located, free of disease, and in good equipment, as part payment. Address "T," care of American Bee Journal.

FOR SALE—100 stands of bees with full equipment, together with honey crop; also, 15 acres of land. Price $1,000.
Gus Sumner, McMurray, Washington.

BEE FARM LAND in Western Washington. Three 80-acre tracts in fire weed belt. Grass grows ten months a year, and sweet clover blooms till middle of October. One of the best bee locations in the U. S. Owner has asthma and must change climate. Price $6.00 an acre, with warranty deed and abstract. Better investigate this.
G. E. Kephart, Puyallup, Washington.

FINEST QUALITY CLOVER HONEY in 60-lb. cans, 14c per lb; No. 1 clover comb honey, $6 per case; No. 2 $5.
F. Barber, Lowville, N. Y.

HONEY FOR SALE—In 60-lb. cans. Dandelion and clover, clover and basswood. State quantity wanted. Quality unexcelled.
Edw. Hassinger, Jr., Greenville, Wis.

FOR SALE—Choice white clover honey in new 60-lb. cans; case of 120 lbs. $14.40. Sample 20c.
Alfred Stutt, Rt. 5, Creston, Iowa.

CLOVER HONEY in 5, 10 and 60-lb. cans. Write for prices.
Henry Price, Elizabeth, Ill.

FOR SALE—Extracted honey, light and dark.
Edward Hogan, Canandaigua, N. Y.

FOR SALE OR LEASE—350 colonies bees on alfalfa clover range..
Students' Bee & Honey Co.,
1716 Rose St., Berkeley, Cal.

FOR SALE—Choice Michigan white clover and milk-weed honey in 60-lb. cans.
Ralph Lenosky, Rt. No. 5, East Jordan, Mich.

FOR SALE—White extracted honey gathered from alfalfa and sweet clover, packed in 60-lb. cans and export cases as follows: 1 case of two 60-lb. cans at 12c per lb.; 55 cases of two 60-lb. cans at 11c per lb.; 1 car load (30,000 lbs.) at 9½c per lb. All F. O. B. above station. Sample sent on receipt of 25c in stamps.
H. R. Fisher, Montrose, Colo.

FOR SALE—White clover honey, case of 120 lbs., $14.00; sample 20c., to apply on your order.
Martin Carsmoe, Ruthven, Iowa.

FOR SALE—New crop extracted honey; two 60-lb cans in a case; white clover, $14.50, light amber $13.00, amber $12.00.
J. G. Burtis, Marietta, N. Y.

CHOICE EXTRACTED HONEY in new cans, 60 lbs. net, two in case. One case $13; three or more 10c per lb.
H. F. Smith, Hooper, Colo.

FOR SALE—Choice clover honey, chunk comb and extracted; no finer quality. Write for quotations. State quantity desired. Sample 10c.
M. Larson, Gardner, Ill., Box 144.

CLOVER AND BASSWOOD HONEY in new 60-lb. cans. Fine quality. Write for prices, stating quantity wanted.
Irvin Nordgaard, Peterson, Minn.

FOR SALE—About 85 swarms with extractor, extra hive bodies, comb and extracting supers. In a favored section, with a big future on hand. Best markets 15 miles; roadside comb 35c to 50c. Minimum wintering troubles. A giveaway at $1,200. Just found rich copper vein.
F. N. Hagmann, Vienna, Va.

FOR SALE—White clover comb honey and white clover and basswood extracted honey. Sample 15c. Prices on request.
F. W. Summerfield, Waterville, Ohio.

FOR SALE—White clover and buckwheat honey in 60-lb. cans.
M. M. Johnson, Osseo, Wis.

FOR SALE—3,600 pounds white clover extracted honey in 60-pound cans, 15c a pound; sample on request.
Floyd Rinehart, Irena, Mo.

FOR SALE—3,000 lbs. white clover honey in 5 and 10-lb. pails; 80-acre bee farm.
W. H. Pearson, Bondurant, Ia.

MISCELLANEOUS

NEW HONEY in October—Atwater.

THE BEE WORLD—The leading bee journal in Britain, and the only international bee review in existence. It is read, re-read and treasured. Will it not appeal to you? Specimen copy free from the publishers. The Apis Club, Benson, Oxon, England. Send us a postcard today. It is well worth your little trouble.

THE "Archiv fur Bienenkunde" is a valuable scientific publication. "It merits the appreciation of all beekeepers acquainted with the German language," says the Bee World (January, 1923). "The Archiv fur Bienenkunde, now in its fifth volume, is of as high grade as any bee journal which comes from abroad, dealing especially with the scientific aspects of beekeeping," says Gleanings in Bee Culture (February, 1923). Annual subscription, $1. Specimen copy free. Publisher, Theodor Fisher, Freiburg im Breisgau, Kirchstrasse 31, Germany.

WANTED

NEW HONEY in October—Atwater.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendering. Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

HONEY WANTED—Comb and extracted, in large or small quantities. State source and how put up. Give lowest price in first letter. E. P. Fosse, Marion, Ill.

BEESWAX WANTED—We need large quantities of beeswax and are paying good prices now. Ship to us at Hamilton, Ill., or Keokuk, Iowa, or drop us a card and we will quote f. o. b. here or your own station, as you may desire. Dadant & Sons Hamilton, Ill.

WANTED—A few tons of extracted clover honey. Mail sample and quote lowest cash price for the lot.
A. W. Smith, Birmingham, Mich.

WANTED—Man for extracted honey. State age, experience and wages wanted.
B. F. Smith, Jr., Fromberg, Mont.

WANTED—Back numbers of the Journal; Complete years preferred.
George Sumner, South Woodbury, Vt.

WANTED—Basswood honey, for table use, or other grades of honey except clover. Send sample and price. J. Wolosevich,
913 W. Cullerton St., Chicago, Ill.

WANTED—Comb and extracted honey. Car lots and less.
Students' Bee & Honey Co., Berkeley, Cal.

WANTED—Extracted honey. Send sample and state price.
Roland Brandt, Postville, Iowa.

WANTED—Comb honey.
Jamison, 690 Adams, Memphis, Tenn.

WANTED—To hear from parties having a brood foundation mill for sale.
Birdie M. Hartle, 924 Pleasant St.,
Reynoldsville, Pa.

WANTED—Extractor; quote lowest cash price. Lorenzo Clarke, Winona, Minn.

HOW MUCH DO YOU GET FROM YOUR BEE JOURNAL?

From an Anonymous Reader.

I suppose most of us feel cheated at times when we read our bee journals by the paucity of helpful information. In reading a recent issue I found, by the most acute reckoning, that there were only two very short paragraphs which offered me any practical solutions to my apiary problems. How much were these two facts worth?

I hear the Editor say "Would you pay 15 cents each for them?" I guess I would easily pay that much. And there that slick editor fellow has me all tied up to his paper for at least another month, since, in one issue, little as it gave me, I more than doubled the cost of the month's subscription.

And so it goes. What will interest you will not interest your neighbor. The number which, for him, is the best of the year and the most helpful is, for you, of little interest. Yet neither of you could afford to be without your bee journals. I find that one of the most helpful facts that I have learned in the past three years has, by actual figures, saved me sufficient to pay a ten-year subscription and leave a balance of several dollars besides. In addition, I expect to go on saving sufficient from the use of such knowledge to keep my journal supscriptions paid gratis the rest of my life.

Then, added to this sense of value, is the joyous satisfaction that sweeps me the first of each month when I get the newest copies of the best papers in my best beloved pursuit and sit down for several happy hours in the favorite chair in the corner with my pipe and a new lot of fresh bee "dope" to agree with or thresh over. Oh, boy, that alone is worth the price of the journal to me.

That "Heavy" Large Hive

The large hive is often condemned because it is too heavy to carry about or to move. I have come to believe, after experience with both the ten-frame Langstroth and the Modified Dadant, that this is mostly a paper argument. There are times, of course, when the larger hive is a cracking big load for one man, but I find that this weight seems pretty well confined to times when it is seldom necessary to disturb the hives in any way—fall, winter, and spring. At other times it is comparatively light.

Two of us have just finished a twenty-four-hour moving job with fifty-four Modified Dadants loaded on a Republic truck. In loading and in unloading, each man carried the hives alone with no unusual effort.

G. H. C.

PREPARING FOR WINTER

By R. A. Morgan.

I am writing of a territory of which this is about the center. The subject of wintering is still the most important one in beekeeping, and my experience should be worth something to the beekeepers of this latitude, as I have been in the business since 1870 and have learned a little each year since that time. For the first ten years I thought cellar wintering was better and about the only method and I still think so for northern Wisconsin, northern Minnesota and North Dakota, but for this latitude outdoor wintering is much better.

I am situated in the center of the "Beekeeper's land of promise," according to Brother E. R. Root, in the August Gleanings, and I think Mr. Root's head is level when it comes to the matter of choosing a honey location.

For the sake of argument we will say that a colony of bees is worth $10 in the spring if they have been wintered perfectly; if they have been wintered well $8; and if poorly only $5. On October 20th bees should be in winter quarters, and in order to get the work all done we should commence when we take off the supers. When I take the last ones off I set an empty super back on the hive. I use a shallow super or 4½ inch section super without section holder. I then lay 3 pieces of wood one inch square and 10 inches long crosswise of the frame; clean corncobs will answer the same purpose. Over this I place two thicknesses of clean gunny sacks, then cover up the hive.

During the fore part of October I have tight wooden boxes made 22 inches wide, 22 inches high, 28 inches long, inside measurement. These may also be made collapsible. In one end of the box cut a slot 1½x10 inches, two inches from the bottom for an entrance. These cases may be placed on the hive stand with the slot in front and lined with corrugated paper. The hive is set into the box and shoved up against the front with enough packing underneath so that the bottom board will be just flush with the slot in front. A piece of galvanized wire cloth one-half inch mesh may be placed over the entrance of the case to keep out mice and rats. Also a piece of board wide enough to fill the space between the hive body and the wire screen and long enough to reach across the hive will form a tunnel for the bees out through the screen.

If the bees need feed it may be given at the top of the frame under the gunny cloth, using either comb honey or pepper-box feeders with thick syrup. After feeding, put on more gunny cloth, dry leaves, flax straw, planer shavings or the like, and fill in all around the hive and on top till the box is full and put on the cover. If the latter is not water tight, tack a piece of tar paper or rubberoid over it and your bees are insured till May 10th. Then you can open your hive, take off the packing, remove the super and set on a body of extracting combs.

To forestall argument I will say that a colony wintered in this way is worth $5 more than one wintered in almost any other way. The first cost of such a box is about $1.50 and the galvanized iron box is about $2.50. The work is no more than putting them in a cellar or cave, and the risk is not half as great. There is no anxiety during the winter, no drifting in the spring, no robbing to speak of, as the hives are not opened till dandelion bloom. Both the wooden boxes and the iron ones may be made collapsible and can be stored outside or inside in a small space. I believe in a box for each hive. Try it.

Vermillion, S. Dak.

NOTHING SMALL ABOUT THE SMALL BEEKEEPER.

By George Gilbert.

Not a few of the text-books and government bulletins, standard lectures on beekeeping and learned articles by experts on the subject contain scathing references to the "small beekeeper." If he could be eradicated, they say, the bee industry would be better off. When the business of honey production is in the hands of "the big fellow," the high-as-muches

ITALIAN QUEENS 50c EACH

In order to gain five hundred new customers we are going to make, after September 1st, a special offer on our SUPERIOR Italian Queens, which we guarantee to be as good as can be bought for the low price of 50c each. We want you to be our customer, so are making you the same price on one queen as we are on one thousand. Our same broad guarantee covers all the queens we send out.

Prices after September 1, 1923:

Untested Queens—One or one thousand, 50c each.
Tested Queens— 1 year old, same price, 50c each.
CYPRESS BEE SUPPLIES in large lots at jobbing prices.

THE STOVER APIARIES, MAYHEW, MISS.

MONEY SAVED

BEE SUPPLIES

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Roots goods at factory prices with WEBER'S Service

Send us a list of your wants and we will quote prices that will save you money

C. H. W. WEBER & CO., 2163-65-67 Central Ave., Cincinnati, O.

agree, all will be lovely and the goose will honk as high as some of us wish prices would. And yet—

What is the greatest improvement sought for at the present time in the honey business? It is the raising of prices to a living level. And who sells car lots of honey so low as to break the back of the market? Not the small beeman. He has not enough honey to sell to do that. He usually has a market right at home for bottled honey, canned honey and so on. No, he is not able to get together a car lot and smash the market. But who does it? It is the "big beeman," of the sections where honey yields are huge. In certain respects, he is like unto the cattle king of olden days, who had so many cattle he did not know how many and who sold them by the drove at prices that the eastern cattle raiser could not meet. Thus the cattle industry of the east was smashed. The big producers of the west are the ones who are spoiling the market. A low carlot sale is heralded and the little fellows get squeezed.

But, the high-as-muches say, the small beeman keeps foulbrood alive by poor methods. Maybe he does, but—

Write to some "big beeman" and ask him for honey for feeding, guaranteed absolutely against infection. You will not get it. He will not risk giving such a guarantee, for he knows that in every big yard there are always some hives infected, going through a "cleaning-up" process. Here and there a small beeman will have foulbrood and all of his class are blamed. Like the big fellow, the small fellow is fighting the disease now. The inspector comes down on him harder than on the big fellow, of course. Why not? He's a little fellow and the big man probably has the ear of the higher-ups and, anyway, he is in a leading position in the state association or district association and in a position to make a big squawk if pinched hard.

The big fellows who complain of the little ones are glad enough to get the little chaps to buy through a central agency or association, because the aggregate buying power of the little chaps enables the big fellows to buy huge lots of bee supplies at a time, thus saving them money. But when the stuff is bought, the big men chatter about the trouble of doling it out in small lots to the little boys who have made the big deal possible, or at least have largely been instrumental in so doing.

Who have made the greatest discoveries in beekeeping? Not carlot men. No, the greatest advances in bee science have been made in small apiaries. It is true that Alexander, Doolittle and others kept large apiaries, but their best work in advancing apiculture was done before they had such large yards. The great discoveries in bee lore have been made by isolated workers in small yards—some with a very few colonies. Their work it was that laid the foundation for modern beekeeping. The "big fellow" is so busy exploiting the discoveries of the self-sacrificing "little fellows" of past decades that he has no time to study and declare beneficial results himself. He takes the results of the study of others and turns out honey by the lakeful and sells it by the trainload, at a price that makes the "little fellow" yearn to go out and gnaw the scenery.

If this be **reason**, make the most of it.

(The little beekeeper who takes care of his bees is not the one who is spoken of with "scathing reference." It is the little beekeeper who just lets his bees take care of themselves, who is the curse of beekeeping, for he not only does not know anything about diseases, but does not try to cure them when he finds it out. He is also the man who accepts any price the grocer will offer for his honey. Some big beekeepers slash the market, but as a rule they avoid slashing, for they are more interested in high prices than the little beekeeper.—Editor.)

BEES FOR 1924

After 10 years beekeeping in Mesa County, Colorado, and 4 years here in Georgia, and shipping to 21 different parties in Colorado, Oklahoma, Missouri, Kentucky, Pennsylvania, Wisconsin, Minnesota, Michigan, Maine, New York, Ohio, Ontario, Canada and Quebec, Canada, in 1923, with less than 1 % loss and 100% satisfied customers, we are now ready for your business for nuclei or package bees with queens for 1924. Safe delivery guaranteed. When you get our bees you get as good bees as anyone has, and a frame that will fit standard hives, on combs from full sheets of foundation and bees from a territory free from disease.

As to our honesty and ability, we will gladly give you names of persons in your state we shipped bees to in 1923 for references, if you live in one of the above named states or provinces, and especially the First National Bank of Moultrie, Ga.

Prices as reasonable as any, in proportion to quality.

J. G. PUETT & SON, BEES AND HONEY, MOULTRIE, GA.

Berry's Queens and Package Bees

Bring repeat orders because they insure honey crops and satisfaction to the buyer.

Booking orders now for Queens and Packages for 1924 delivery.
Write for descriptive price list.

M. C. Berry & Co., Hayneville, Ala.

NOTES FROM GERMAN BEE MAGAZINES

By Prof. Dr. H. v. Buttel-Reepen, Oldenburg in Old.

Who is the first inventor of artificial queen-cell cups?

If I am rightly informed, Doolittle is looked upon as the inventor of the system of artificial cell-cups in America. It is, of course, possible, that such an invention was made at different places nearly at the same time. Only think of the invention of the frames, which was made at the same time in America by Langstroth and in Europe by v. Berlepsch. It will anyhow be of interest to hear that the watchmaker, Wilhelm Wankler, in Sulzburg (Grand-dukedom of Baden), made those artificial cell-cups before 1881, as is reported in the "Bienen-Vater" (Vienna). He exhibited these cells for the first time in the year 1881, at Kannstadt, and in 1882 at Bruchsal, with all the apparatus which is necessary to make these cups in the right way. In the following year he showed the same at the fair in Frankfort-on-the-Main. But beekeepers laughed at this "silly trick" and there was only one who took great interest in the whole system, and this was Frank Benton who, coming back from the East, exhibited some hives with bees from Palestine, etc. Benton bought the whole lot and all the materials exhibited by Wankler, and took it with him to America, afterwards writing to the inventor that he was very much pleased with this new method.

But it is very curious that Benton, when he published his book about "The Honeybee," in the year 1895, did not mention the artificial cell-cups with a single word.

Wankler was led to his invention through his mother, who used to make artificial flowers of wax. She advised him to prepare those cell-cups in the same way as she made the buds of flowers, i. e., by dipping a wet piece of wood of the right shape into melting wax.

The "May Disease."

Up to now the real cause of the so-called "May Disease" has not been discovered. As far as I know, it is identical with what is called "Paralysis" in America. Especially during the month of May one can observe many young bees crawling about in the sand or grass before the hives, unable to fly. Many beekeepers pretend that this illness is caused by the pollen of certain plants, which bloom early in the spring, f. i., marsh marigold **(Caltha palustris)** or dandelion **(Taraxacum officinale)**. I have several times tried to solve this problem by microscopical research, but in vain. Now K. Hofmann, a well-known beekeeper and editor of the "Bayr. Bienen-Zeitung, claims in the "Schweiz. Bienen-Zeitung" that he has the solution. He dissected the intestines of sick bees, which were crawling about by hundreds and thousands on the ground before the hives and found them filled with pollen of dandelion. But as sound pollen could not be the cause of this evil, he examined the hives and found many cells filled with sour-smelling pollen of the same flower. He removed this sour pollen by means of a small stick and the colonies recovered very soon.

But how was it possible that the pollen was set in fermentation in such a short time? He presumed, and is quite convinced that night frosts, which happen often during April till the middle of May, have spoiled the pollen in the flowers and the bees carry it into the hive in the early morning hours. This frost-bitten pollen shows under the microscope—as Hofmann says—an altered appearance. The skin of the very small grains of the pollen is split and Hofmann presumes this to be the cause of the quick spoiling in the cells, very likely effectuated by fungi, etc.

Hofmann noticed that colonies having their entrances northerly, and therefore flying later in the morning, did not get the May disease, and he believes from this reason that the frost-bitten pollen in the flowers gets spoiled very quickly and will therefore not be carried into the hives. He therefore advises to keep the entrances of the hives closed till midday as soon as the May disease makes its appearance.

One is inclined to make signs of interrogation after some statements,

IT'S NOT WHAT YOU **EARN** BUT WHAT YOU **SAVE**

BEEKEEPER'S who bought "SUPERIOR" supplies for the season of 1923 AVERAGED TEN TO TWENTY PER CENT SAVING on such purchases, compared with what they would have paid elsewhere for goods of the same quality.

MOTTO: "GET 'SUPERIOR' SUPPLIES—THEY PAY DIVIDENDS"

SUPERIOR HONEY COMPANY, Ogden, Utah

Manufacturers of Beekeepers Supplies

Branches at Idaho Falls, Idaho and Riverside, Calif.

N. B: We are in the market for COMB HONEY and BEESWAX

but one thing seems certain, that in some cases sour and pappy pollen will be found in the combs early in the spring and that the beekeeper has to take out such pollen to prevent diseases.

Editor's Note: (We should very much like to charge May disease or paralysis to the pollen of a certain plant; but the variety of spots where the disease appears, indicates that it is not the pollen of any particular plant which brings it about. We have had reports of the disease, at the same time, from Florida, from California, from Italy and from France, and when we suggested the pollen of certain plants, some of the correspondents assured us that those plants did not exist in their locality. Perhaps it is the pollen **of any plant** under certain condition, that causes the start of the trouble.—Editor.)

Honey as Very Important Medicine

There have been very striking honey-cures in a home for sick children at Weesen (Switzerland). The physician of this establishment reports the results in "Schweiz. Bienen Ztg."

Two hundred children have been cured last year by getting honey in warm milk from one-half teaspoonful to 1 tablespoonful twice a day, without getting any other medicine. There were, of course, many other remedies in action, such as splendid mountain air, rest, good nourishment, etc.

On the day of admission it was stated that f. i. two children (brothers) had the following blood constitution: the smaller one showed 53 per cent Marmoglobin and took the iron in the blood; this one took the honey cure. The larger one had 70 per cent Haemoglobon and took the milk cure without honey. After six weeks from the day of admission the first had 82 per cent Hb. and 4 kilograms (about 8 pounds) increase in weight, whilst the second one only showed 78 per cent Hb. and 1 kg. increase in weight.

Most of the children were weak, pale, nervous and partly with pulmonary diseases, bronchitis, etc., but on average all those who had taken the honey cure recovered better and quicker than those who did not get honey. Very likely the vitamins which exist in the honey caused this effect. As these vitamines are destroyed by strong heat, care has to be taken that the milk is not boiling when the honey is put into it.

TOO STRINGENT FOULBROOD LAW?

By Major Shallard.

On page 183, April issue, it is stated that the southern coastal states (expect Alabama) have rigid bee disease laws providing for the burning of all diseased colonies. In my humble opinion, these laws will defeat their own object. If laws are going to be enforceable, public opinion must first be sure that the punishment fits the crime.

It has been found that where public opinion considered the punishment too great for the crime the juries refused to return a verdict of guilty.

This rule holds good with regard to bee laws the same as any other. It would be impossible to convince a jury of Dr. Millers that there was any justification for burning a colony of bees because it was diseased, no matter what the nature of the disease. There would be just as much justification for burning a man's house because it had contained typhoid fever.

All diseases can be eliminated, as beekeepers know; but it will be found hopeless to eliminate them from any particular locality unless the law has the full support of the people interested, and if it is going to needlessly destroy property it is not going to receive that support. No inspectors are going to get results who visit an apiary as policemen. If the apiarists, knowing that they have disease (and are perhaps trying to cure it) hear that an inspector is about, and know that discovery means loss of their colonies by fire; they will naturally do all in their power to prevent his finding the disease. If, on the other hand, the power to burn was deleted from the law and the inspector came as a friend who would help fight the disease, not only by telling the apiarists what to do, but also by showing them how to do it, very much better results would accrue. All history shows that progress is only possible by love. "Do unto others what you would they should do unto you." Force is no good. The "mailed fist" gets nowhere. It only antagonizes people. Laws are only enforceable if they have the full support of public opinion. Modify the bee laws and you will get results.

Remember Paul's advice: "Be moderate in all things."

Australia.

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Now booking orders for May delivery, 1924.

Same price, same package, introduced-laying-enroute queens, and better service and quality.

JES DALTON,
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Need Some Queens?

We can ship at once. Same price as quoted in our September ad.

Remember, Forehand's Three Bands are THRIFTY.

W. J. FOREHAND & SONS,
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For years we have been shipping thousands of pounds of bees all over the U. S. and Canada

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We are prepared to take care of your rush orders

2-pound package bees, $3.75 each, 25 or more, $3.60 each.
2-frame nuclei same price as 2-pound packages.
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QUEENS FREE when 25 or more packages are ordered. For less than 25 lots, add the price of queen wanted.
Untested queens, $1.00 each, 25 or more 85c each, $70.00 per hundred.
This is a special SALE on untested queens of high quality.
Select untested, $1.70, 25 or more $1.50 each. Tested $2.25 each, 25 or more $2.00 each.
Select tested $2.65 each, 25 or more $2.25 each. Breeders $5.00 to $15.00.

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BURR COMBS

Chips of Wax from the Factory

By Carroll Swanson.

JUST a little description of the place where Dadant's foundation and other beekeeping specialties are manufactured. The factory is a short distance from the city of Hamilton, Ill., and is reached by a private road which winds between orchards and fields and down through a shady ravine before coming to the buildings, which have been enlarged several times to house a steadily growing industry. In fact, it is about the last place one would look for a factory, and especially one which is turning out a product which is known throughout the United States and in fact throughout the beekeeping world.

Mr. Pellett has told of the beginning of the manufacture of Dadant's Foundation many years ago beneath a young oak tree in the Dadant yard. The supply business and the tree have been growing, but the tree is now able to shade only a small portion of the factory. While the tree has been steadily spreading upward and outward the factory has been enlarged several times in order to house the increasing number of machines and equipment. This beginning accounts for the location of the factory and as it has so many advantages in its present location it has never been moved.

After viewing the outside of the buildings you will want to see the inside and the machines and apparatus that are used to convert combs and wax into Dadant's Foundation. We will begin at the platform where the wax is unloaded. This wax is hauled to the factory on trucks, and enormous quantities are handled each season. You will note the large bins into which this wax has been sorted according to its color, and also the machinery for refining and purifying it. The battery of sheeting machines is very interesting and the milling machines are examples of the exactness which is necessary in producing such a product.

You will notice the electric motors which furnish power for all of the machinery. These motors have replaced the steam engine formerly used and the electricity is furnished by the Power Dam across the Mississippi. If you ever visit in this vicinity you should visit both the dam and power house and the Dadant factory, in this way, as Ring Lardner would say, "killing two rolling birds with one mossy stone in the bush."

Receiving the Wax.

Shipments of beeswax come through in many different forms. Some beekeepers send wax by parcel post packed in a match box (the seven-cent size), while several beekeepers may ship together and send as much as sixty large sacks at a time. Part of my work is weighing this wax, and this is carefully done by means of two accurate scales which are checked against each other should any difference show between our weights and those of the shipper.

Every shipment should weigh the same here as it does when it leaves the sender, and most of them do. But occasionally we get packages wrapped like the average grocer wraps oranges, in a paper bag. They are all right—if they aren't handled. About the only thing that I notice handled carefully by transportation companies are dynamite and live bees.

If wax is packed loosely it moves and rubs until it wears through a single sack or breaks loose in even a well-made box. Boxes are too easy to drop, anyway. The nicest, safest package is a double burlap sack in which the wax is packed tightly.

Next in importance to packing wax well is putting a tag on it which will insure delivery and an identification tag inside of the package of wax, so that returns can be made promptly and accurately.

Speaking of identification tags, we have received several shipments with the identification tags carefully filled out and enclosed in the letter with the bill of lading, instead of being in the sack of wax.

Along this same line are the important letters we receive with no signature and often times no way of learning the postoffice from which it was forwarded. Although we have no finger-print department, we almost always find the sender.

When we breezed through the factory a few minutes ago you noticed the rendering room, where we secure wax from the old combs sent to us. We get some combs which are badly infested with moth. They have just about as much wax in them as there is filling in a double crust boarding-house pie—not enough to write home about. The moth larvæ have cleaned up the wax, leaving the dirt and refuse.

Then there are shipments of combs which are heavy with honey. There is a lot of weight, but most of it is honey, which usually cannot be reclaimed. Combs containing honey should not be shipped unless packed in good, tight containers, such as kegs, cans or barrels. Comb affected with American foulbrood must never be shipped unless thoroughly boiled for at least thirty minutes.

When I think of the freight service we sometimes get, I think of words intended only for the long ears of army mules. Freight service reminds me of Mark Twain's comment on the weather: "Much has been said about it, but very little has been done about it." The early order is the one that brings the goods to you in plenty of time to assemble and keeps you from losing any of the honey crop. It allows us to give service and make friends.

Filling Orders.

Another duty of mine is to check over orders for supplies to see that the factory order is for the exact goods that the customer wants. Usually this is comparatively easy, as most orders are well stated. Some are as intricate and hard to understand as the instructions on an income tax return blank.

If there is any one thing that will drive a conscientious supply dealer frantic and cause him to tear his hair and rend his garments it is to receive an order, "Send me ten gums and caps at once. My bees are swarming now." With no former orders as a guide, we send regular ten-frame equipment and rest the results with the god (or goddess) of chance.

There is such a variety of equipment and so many different sizes and grades of foundation are necessary to fit the different frames that some orders are very difficult unless there are former orders to which we may refer. Our system of solving for unknown quantities will equal any in existence, and since the last sizes of wired foundation went on the market we are devising one whereby we divide the customer's telephone number by the date of the order, subtract the number of colonies he has, add twice the number of pounds average last year's crop and send him 8 9-16 wired medium brood. This will work fine when we all use slotted bottom-bars.

ALWAYS MAKE SURE THAT THIS TRADE-MARK IS STAMPED ON EACH PIECE OF

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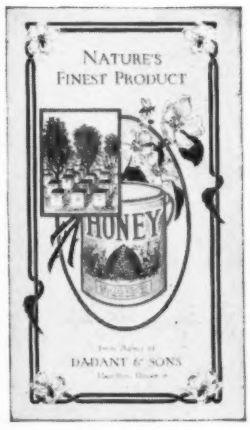

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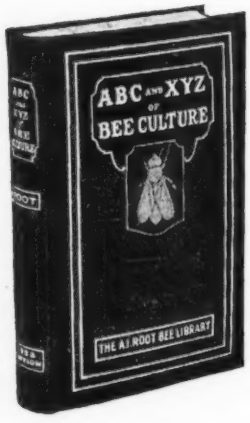

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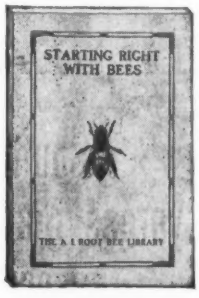

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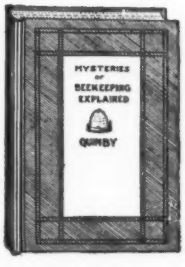

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